JAN 20 1921

Minnesota Medicine

Journal of the Minnesota State Medical Association

Vol. II FEBRUARY, 1919 No. 2

CONTENTS

ORIGINAL ARTICLES—

A Medical Service With the British Expeditionary Forces in France. By *Ernest T. F. Richards, M. D.*, St. Paul, Minn. 41

Neuro-Circulatory Asthenia (Irritable Heart), Study of 35,000 Draft Recruits. By *E. L. Touhy, M. D.*, Duluth, Minn 47

Prostatic Calculi. By *E. S. Judd, M.D.* and *J. L. Crenshaw. M.D.*, Rochester, Minn. 52

Slight Symptoms in Gall-Bladder Disease with Marked Gross Pathological Lesions. By *J. S. Holbrook, M. D.*, Mankato, Minn. 57

The Surgical Importance of Abdominal Adhesions. By *Wm. R. Bagley, M. D.*, Duluth, Minn. 58

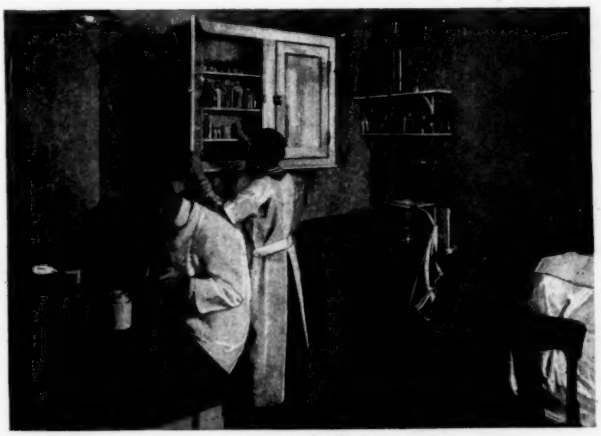
The Relation Between Tonsillar Infection and Recurrent Vomiting. By *Rood Taylor, M. D.*, Winona, Minn. 61

(*Continued on Advertising Page III.*)

ENTERED AT THE POST OFFICE IN SAINT PAUL AS SECOND CLASS MAIL MATTER.
ACCEPTED FOR MAILING AT THE SPECIAL RATE OF POSTAGE PROVIDED FOR IN SECTION 1103, ACT OF OCTOBER 3, 1917, AUTHORIZED JULY 13, 1918.

The United States Army Physician

Confirms his diagnosis by Laboratory Tests



Do You?

The Proximity of the BEEBE Laboratories makes it possible for you to BE SURE OF YOUR DIAGNOSIS.

Wassermann Test . . $5.00
Tissue Examination . 5.00
Reports wired on Request.

BEEBE LABORATORIES, Inc., St. Paul, Minn.

PRICE LIST OF PLAIN AND FORMALIZED

PYOKTANIN CATGUT

Manufactured by

The Laboratory of the Ramsey County Medical Society

LOWRY BUILDING

ST. PAUL, MINN.

	Per Dozen Strands
Size OO—14 inches	$0.65
Size O—14 inches	.75
Size 1—14 inches	.90
Size 2—14 inches	1.00
Size 3—14 inches	1.15
Size 4—14 inches	1.20
Size OO—28 inches	$0.90
Size O—28 inches	1.05
Size 1—28 inches	1.20
Size 2—28 inches	1.35
Size 3—28 inches	1.50
Size 4—28 inches	1.65

Special Discount to Hospitals and to the Trade. **Cash must accompany the Order.**

ADDRESS:

Laboratory Ramsey County Medical Society

Lowry Building, Saint Paul, Minnesota

For Sale by all Druggists

Minnesota Medicine

Journal of the Minnesota State Medical Association

Vol. II FEBRUARY, 1919 No. 2

ORIGINAL ARTICLES

A MEDICAL SERVICE WITH THE BRITISH EXPEDITIONARY FORCES IN FRANCE.*

ERNEST T. F. RICHARDS, M. D.
St. Paul, Minnesota.

With American troops pouring into France, and American doctors closely following to care for those incapacitated through injury or disease, this is an appropriate time for us to consider some of the problems which our medical colleagues already over there, as well as those who expect shortly to go, will have to meet.

Military medicine differs greatly from civilian, and when one enters an enormous military hospital, such as those now found so numerous in the War zone, one is at once impressed with the fact that he confronts an entirely new realm in medicine. This is probably true of both surgery and medicine, but in medicine in particular one meets with problems dealing not only with totally new clinical syndromes but with the greater ones of their undiscovered etiology and unguided therapy. It then becomes a matter of learning quickly from first-hand experience how to grapple with such interesting problems as trench fever, gas poisoning, epidemic jaundice, trench feet, shell shock and many others.

This truth—that the gulf between civil and military medicine is vast—was impressed upon me during the winter of 1915 and 1916, when, as the officer in charge of the medical division of a military hospital in France I welcomed the opportunity to study first-hand in the British Army Medical Service the same problems that the American Army Medical Service is now meeting.

TRENCH FEVER

Our hospital formed one of a chain of those attached to the British Expeditionary Forces and was kept filled during that winter with the sick and wounded from the Northern Sector of the British line. One of the most important conditions we met was Trench Fever. You are all now familiar with the term. Its great importance in military medicine of today can not be overestimated. It forms as pressing a problem now as any encountered in the War zone as, although of itself non-fatal, the morbidity resulting from it on the Western Front probably exceeds that from any other disease. Those affected with it are in many instances permanently unable to resume their former duties, and some pass back into civil life incapacitated and a charge on the state. The importance of the disease is also emphasized by the fact that in its later stages it is a direct cause of a large percentage of the "irritable heart" of the soldier, of neurasthenia, myalgia, and of so-called "chronic rheumatism" in many of its manifestations. You see, therefore, at a glance how great the need is of most careful study of this condition.

Definition.

Trench fever is now known to be a blood infection communicable from man to man by the louse and possibly other parasites. It may best be defined as a relapsing fever occuring with great frequency among troops on active service and presenting a uniform group of symptoms which conform with no previously described condition.

* Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

Etiology

Although we now know trench fever is conveyed by lice, the causative organism of the disease yet remains to be discovered. While we were in France every case of fever that came into our wards—and they came in large numbers—was carefully investigated first from the standpoint of etiology. Fortunately our hospital was equipped with an excellent laboratory so that it was possible to carry out very complete bacteriological studies on all cases. One or two only of the entire number proved to be paratyphoid fever, while not a single case of true typhoid was seen. This is a glowing tribute to the protection afforded by the anti-typhoid and anti-paratyphoid inoculations which every individual—soldiers, nurses, doctors, etc.— is compelled to receive before entering the War zone. So also, no case of acute rheumatic fever occurred in our entire series—striking evidence against any relationship between this disease and exposure, as practically all of our cases came directly from the trenches where they had been subjected to the most rigorous and changeable climatic conditions. Another interesting fact was that under such conditions acute follicular tonsillitis was extremely rare. True influenza was never proved to occur in-so-much as catarrhal symptoms of the upper respiratory tract were rare, and also careful examinations of sputum and blood cultures were invariably negative for the influenza bacillus.

In those cases of pyrexia clinically diagnosed as trench fever our bacteriological studies like those of others were uniformly negative. Such studies included blood cultures, cultures from stools and urine, careful search of fresh and stained blood films, and cultures from muscles and the subperiosteal areas of the long bones.

Though the etiological factor, therefore, in trench fever is yet a matter for speculation, the infectivity of the disease has been proved by Capt. McNee of the British Army Medical Corps through its ready transmission from one person to another by means of the blood. This investigator, using healthy soldiers who volunteered for the experiments, found that the disease is transmissible in every case by the whole blood whether injected intravenously or intramuscularly. He found that blood corpuscles after being washed several times in salt solution to remove the plasma were still infective. Blood corpuscles were broken down and the hemoglobin-tinted fluid passed through a filter in an attempt to prove the virus an ultramicroscopic one confined to the corpuscles. The fluid when injected, however, was not found to be infective.

The report of the British Trench Fever Commission published last month has corroborated these findings of McNee's and has also added further important experimental data. Amongst these are: That the excreta of infected lice when applied to a broken surface of skin readily produce trench fever; that the bites alone of infected lice do not bring about the disease; that the bodies of infected lice when crushed on the broken skin are capable of producing trench fever; and that the infection is not a disease of normal lice, but in other words, infection can only be conveyed by lice that have fed upon an individual already infected with the disease.

Clinical Course

The onset is usually sudden and sometimes is exceedingly abrupt; the patient may suddenly feel giddy with a burning head, he shivers and may be very short of breath. In such cases of abrupt onset the soldier may have to fall out if on parade or marching and often has great difficulty in returning to camp without assistance. He complains of severe headache, especially frontal and behind the eyes. This is rapidly followed by pain in the lower part of the back, and on the second or third day in the legs. With this pain in the legs there is often tenderness on pressure over the shins. The tenderness is most marked over the lower half of the shins and may be very severe, comparatively little pressure causing the patient to cry out with the pain thus produced. A less degree of tenderness is often present in the calf muscles. The patient generally shivers but there is never a definite rigor. He is occasionally flushed and often sweats profusely. The appetite is lost. Leucocytosis averaging from 10,000 to 15,000 may be present during the attack. There is no rash.

Depending upon the duration and type of trench fever two clinical forms are recognized:

(a) the short, and (b) the long. In the short form the temperature rises rapidly to between 102 and 104 degrees Fahrenheit. On the third or fourth day the temperature suddenly falls to normal or sub-normal but there is no corresponding improvement in the symptoms. After an interval of a few hours the fever again rises and then after another two to five days it returns to normal. On this occasion there is immediate relief of all symptoms and the patient is fit for duty almost at once.

In the long or periodic type, which is the typical relapsing form, the temperature rises to between 101 and 104 degrees on the day of onset. With the fever there are the typical symptoms: frontal headache, conjunctival congestion, shivering, sweating, pain in the lumbar region and in the shins with tenderness of the shins and calf muscles. After a period varying in length from twenty-four hours to five days the fever drops and all the symptoms disappear. The patient may then be thought to be well and sent back to duty, but after a period of usually five to eight days the fever and other symptoms, especially the pains in the shin, reappear. On this second occasion the febrile period usually lasts about forty-eight hours. It is followed again by a remission and subsequent relapses, or there may be a period of unstable temperature. Eventually a certain percentage of the patients pass into a stage of chronic ill health, suffering from recurrent pains in the limbs, headaches, nervous manifestations such as mental depression, excessive tendency to sweating, disordered action of the heart and abnormal responses to stimuli. The infection, in some cases, is very persistent, and acute febrile relapses may occur after months of quiescence.

Prognosis.

About ninety per cent of trench fever cases yield to symptomatic treatment and are able to return to duty in four to six weeks. In the remaining ten per cent the disease pursues a more obstinate course and may show febrile relapses after periods of several months, or there may be permanent ill health as a result of myocardial irritability, recurring myalgias, or nervous exhaustion.

Prophylaxis

The prophylaxis of trench fever rests upon the extermination of lice. This, under the conditions of modern warfare, is a very difficult problem. To render the men themselves louse-free, the chief measures consist of shaving the hairy parts of the body, hot tubs, and smearing the underclothing with a louse-destroying grease. It might seem that it is not always convenient in trench life to carry out such procedures. However, it is very surprising how quickly the systematic parading of troops from their billets or dugouts and their thorough disinfestation has become a part of the modern military regime. The best louse-destroying grease has been the subject of innumerable investigations. At present the most satisfactory grease for application to the underclothing is composed of crude naphthalene, four parts, and soft soap, one part (Bacot and Copeman).

Clothing, blankets and kits are best disinfected by heat. Dry heat is preferable as clothing may then be worn immediately after treatment. A temperature of 55 degrees C. for thirty minutes, or 60 degrees for fifteen minutes, is necessary to kill lice and their eggs with certainty. Such temperatures, however, will not disinfect the excreta of lice. The necessary temperatures for this purpose have not yet been determined (Byam et al.).

To rid billets, dugouts and huts of lice they are fumigated. The best gases to use for this purpose are sulphur dioxide or hydrocyanic acid gas. The latter is dangerous except in buildings which can be readily ventilated, but it is the more certain of the two (Byam et al.).

Finally, in the prophylaxis of trench fever, as in the case of other infections, there figures the problem of carriers. This matter is at present a subject of most careful investigation by the British Sanitary authorities. With the disease subject to relapses over indefinite periods of time, the carrier problem is necessarily proving a difficult one to control.

Treatment.

Therapeutic efforts have so far proved unavailing in shortening or modifying to any appreciable degree the course of trench fever. Rest, provided it is begun early enough, followed later with moderate exercise and thyroid

therapy, has in the hands of some apparently lowered the subsequent incidence of disordered action of the heart.

The salicylates will in some cases relieve the intense shin pains, but many require morphine. Salvarsan and quinine have proved useless. The sera of convalescent patients have been injected intravenously without influencing the course of the illness.

Of the numerous local applications used for the painful shins, cold compresses of saturated magnesium sulphate solution, first recommended by Captain D. S. Harvey of the R. A. M. C., seemed in our series to give some relief.

GAS POISONING

Turning from this brief sketch of trench fever, let us glance for a moment at what is perhaps the most tragic condition the medical officer in France has to combat—Gas Poisoning.

There have been innumerable gases employed in this war. As soon as an antidote is found for one a new gas is invented.

CARBON MONOXIDE GAS

Explosives forming CO gas in large quantities when suddenly dissociated are very common in modern warfare. No harm is done by the liberation of this gas in the open air, but in dugouts, caves, mine galleries or deep mine craters, severe and even fatal cases of poisoning occur. The same blood changes, symptoms and treatment apply in these cases as in CO poisoning in civil life.

DRIFT GASES

During the winter we spent in France chlorine was the most popular drift gas with the enemy and "gassed" cases were numerous on our service; during the course of a single night for example, over one hundred victims of this appalling method of warfare were admitted to the medical wards. Chlorine formed an excellent drift gas as, (1) a 1 to 10,000 concentration rapidly puts a man out of action—by asphyxiating him, owing to its intense irritative property; (2) it is much heavier than air; (3) it is manufactured in huge quantities in trade processes; (4) it is easily compressible into cylinders for convenience of transport and handling. Moreover, a respirator is easily contrivable to protect the person who manipulates the brigade gas attack; and it is obvious that no drift gas can be used offensively from which the users are unprotected.

Pathology.

The pathological findings in individuals dead of gas poisoning may be summed up as follows: most intense congestion with hemorrhages, edema, and emphysema of the lungs; dilation of the right heart; submucosal hemorrhages of the stomach; and venous congestion of the brain due to the asphyxial character of the death.

Symptoms.

The extent to which an individual is affected by the poisonous fumes differs greatly and depends largely upon how securely he is able to protect himself with his gas helmet at the time of the attack. The use of these helmets has cut down the mortality rate from gas attacks wonderfully. Both the British and French soldiers place great faith in them as a means of protection, and many of them told us that if they had had their helmets on in time, or if the masks had not been torn, they would have escaped poisoning entirely. In those most seriously affected the picture of suffering presented almost beggars description. The main clinical symptoms may be classified as follows:

Cyanosis;
Dyspnea;
Cough with profuse expectoration;
Pain in the chest;
Irritation of the throat;
Salivation;
Conjunctivitis;
Stupor;
Headache;
Epigastric pain;
Nausea and vomiting;
Fever.

Physical Findings.

The chief physical findings are of course in the lungs. Difficult rapid respiration and pain upon breathing are prominent. Over both lungs, and most marked over the lower lobes, there is impaired resonance ranging from slight to well marked dullness. Throughout the chest,

frequently obscuring the heart tones, harshened breath sounds accompanied by rales of every known variety are the prominent findings upon auscultation. Especially notable are the coarse, bubbling type of rale situated at the lung bases. In about 2 per cent of our cases broncho-pneumonic patches of consolidation appeared at the end of the first week of illness. In one case of the series, a large serous exudate occurred in the pleural cavity in the fourth week.

Feeble heart tones, increased pulse rates, low blood pressures, and occasional definite myocardial dilations, are the chief circulatory phenomena.

Other physical findings are: evidences of laryngeal irritation; cyanosis; heavily coated tongue, often of a greenish yellow color; foul breath; tenderness in the upper abdomen, being in some patients very marked; and, depending upon the depth of the stupor, diminished pupillary, skin and deep reflexes.

Course of Illness

In the majority of our cases, even in those classified as mild, both physical signs and symptoms were very slow in clearing up. This was especially true of the cyanosis, which showed great tardiness in disappearing and a marked tendency to return upon slight exertion, such as sitting up in bed, even when all other evidences of poisoning had gone.

Dizziness was another obstinate symptom and often while not present while lying in bed, was frequently very troublesome during convalescence when attempts were being made to get the patient up and around. In several cases, owing to the dizziness, confinement to bed was necessary during the entire stay in the hospital—which extended sometimes to five and six weeks, after which, if not sufficiently well to be transferred to a convalescent camp, the patients were sent to England by hospital ship.

Cough and expectoration were also slow in improving and persisted in many cases well into convalescence.

Fever of slight or moderate degree lasted in the most severely ill throughout their entire stay in hospital.

Convalescence, even in mild cases, was slow and attended with considerable muscular and nervous exhaustion. Several patients, after a five weeks' stay in bed, had to be shipped on stretchers to England to convalesce. Recurrence of cyanosis and dizziness on exertion, coupled with a low blood pressure, an accelerated pulse, and anemia, frequently made their further convalescence exceedingly tedious.

Treatment

The treatment adopted by us for this distressing condition consisted of:

Enforced rest in bed;
Fresh air;
Forced nourishment;
Expectorants;
Oxygen inhalations;
Venesection;
Atropine sulphate;
Strychnine, digitalis and morphine.

It is somewhat problematical which of these measures were of the greatest moment, but with a large number of the cases desperately ill on admission, the total mortality rate under this regime was only 3.5 per cent.

Rest in bed with the maximum amount of fresh air, the patient being kept as warm as possible, and forcing of nourishment, were undoubtedly important factors in saving the lives of many.

Of the expectorants, ammonium carbonate used early helps to clear up the copious frothy sputum.

Inhalations of oxygen strikingly relieve the air hunger, the cyanosis and the distressing dyspnea. In those most seriously ill it was freely used at short intervals, the patients themselves frequently begging for it. When possible the patient should be kept in an atmosphere of pure oxygen until al alarming phenomena have disappeared, even if this requires a continuation of the oxygen supply for several days.

A most important measure is venesection. In those cases showing extreme cyanosis, greatly labored breathing, or right heart dilation, venesection was employed with very great benefit. It was followed in each instance by a distinct lessening of the cyanosis, diminution of the headache, and improvement in the other symptoms. From our observations it would appear that this measure to be of most

value should be carried out early and repeated if necessary at rather frequent intervals, with the withdrawal of only moderate amounts of blood on each occasion.

Atropine sulphate, in large doses hypodermatically, was of definite value. Strychnine was of doubtful, but in a few instances of some apparent value. Tonic doses of digitalis, after the acute stages of the poisoning had subsided, and particularly during convalescence, was distinctly beneficial.

SHELL GASES

At the present writing, drift gases have been largely replaced on the Western Front by shells containing chemicals in liquid form generating toxic gases in the presence of moisture. Dichlorethylsulphide, better known on account of its odor as "Mustard Gas" has been extensively used by the Germans since they first employed it against the British troops in July, 1917. When such a shell strikes an object a special fuse explodes a chamber of picric acid, bursts the shell, and sprinkles the liquid over a large area.

Since November, 1917, a new chemical has been identified in German shells. This substance, commonly called "Arsine," is diphenylarsine-chloride. As found in the clothing of gassed men, it consists of fine solid particles having a strong garlicky odor (de Tarnowsky).

In both mustard gas and arsine the symptoms are: severe epigastric pain accompanied by repeated emesis; coryza of varying severity; conjunctivitis with profuse lacrimation and in some cases photophobia; cutaneous symptoms such as, erythema, severe itching, blisters and edema. After two to three days a painful laryngitis, often with aphonia, followed by severe bronchitis, develops.

The shell gases have been most successfully met by the British and French medical men and the mortality rate has been very low. The most important means of protection are the gas masks provided with the proper antidotes (which obviously for military reasons cannot be discussed at this time). The general management of these gases is similar to that described for chlorine poisoning. Gastro-intestinal symptoms are fairly well controlled by the daily administration of 100 c.c. of a 1 to 1,000 solution of saccharate of lime. For the eyes, sodium bicarbonate washes give relief. For the respiratory tract, th application, by means of an atomizer, of a protective oily solution such as liquid albolene gives excellent results in the milder cases; for the severe cases, intratracheal sprays are employed. For the skin lesions the British employ douches, bathing, and wet dressings of sodium bicarbonate solutions; the French treat all their burns with a protective dressing of guttapercha (6 to 10 per cent) and paraffin (90 to 94 per cent), made popular under the name of "Ambrine."

INFECTIOUS JAUNDICE

Infectious jaundice, another important medical problem occurring among the troops in France, was of especial interest because of its striking similarity to the infectious jaundice seen in civil practice. The condition is substantially the same as that described in 1886 by Weil and since known as Weil's disease. As is well known, widespread epidemics of this condition have been recorded in the United States. Its chief features are: jaundice, fever, hemorrhages, and the occurrence of cases in epidemics or localized groups. The Japanese worker, Inada, and his collaborators, have established from a study of the disease appearing in Japan that the infection is caused by a spirochete—the spirocheta ictero-hemorrhagica. The organism appears to gain access to the human individual through the alimentary canal, and possib'y also through the skin. Lice have been considered as possible intermediate hosts, but the tendency now is to blame the field-rat, as Inada and his coworkers have succeeded in finding the spirochaetae of jaundice in the kidneys and urine of 38 per cent of ordinary field-rats in the infected areas in Japan.

That it is possible that other organisms, such as the B. paratyphosus, may be factors in the production of epidemic jaundice must be kept in mind, but it would appear that the great majority of cases of infectious jaundice met with in armies on campa'gn can be accepted as examples of Weil's disease.

The clinical course of the infection as we observed it in France was of a fairly uniform type. The onset may be abrupt with a chill; or more gradual with intense headache, dizziness, nausea, persistent vomiting, diarrhoea,

and abdominal pain. An irregular fever develops, and jaundice appears in 48 to 72 hours, at times of but slight degree, but gradually deepening in the severe cases. Hemorrhages into the skin and conjunctiva may take place. Bleeding from the nose, mouth, stomach or bowels may occur in the severely jaundiced cases. A decided albuminuria with numerous casts and red blood cells is a striking feature. In the severe cases the prostration is practically a collapse. The muscular soreness prevents movement. The legs may be swollen. Active delirium may be present. Drowsiness with slowness of the pulse is common. After three or four days, in a mild case, the fever gradually drops, convalescence slowly begins, and the yellow color gradually fades. Slight or severe febrile relapses may occur, or a mild fever may continue for twelve to twenty days. In a fatal case, the jaundice deepens, vomiting is marked, the temperature becomes subnormal, prostration is extreme, and the patient dies of exhaustion. Physically, jaundice of greater or less degree, with injection of the conjunctivae, herpes, dry tongue, sordes, and late appearing papular rashes in a severely prostrated patient, make the general picture of the disease. The abdomen is usually tender, and resistant if the pain is extreme. The liver and spleen are usually not enlarged.

The prognosis may be said to be favorable, even in the more severe cases The death rate averages less than six per cent. The virulence of the disease as seen by us in France is much less than that described in Japan.

The treatment of infectious jaundice is at present purely symptomatic. Good nursing, unlimited fluids, fresh fruits, and the rectal administration of glucose (6 per cent solution, 1 pint) once or twice daily in cases with vomiting and acetonuria, are the main indications.

Many other conditions, as for example, shell shock, trench feet and trench nephritis, make together with those we have discussed, an active medical service in a military hospital a rich and treasured experience. But apart from this and the valued associations one makes, to the doctors who serve comes the greatest recompense of all—the conviction that they form an absolutely essential and indispensable factor in winning the greatest war ever fought for the sake of humanity.

NEURO-CIRCULATORY ASTHENIA (IRRITABLE HEART), STUDY OF 35,000 DRAFT RECRUITS*

E. L. Tuohy, M. D.,
Duluth, Minnesota.

The statistical data furnishing the basis for this discussion and paper was secured while the writer was acting head of the Cardiovascular Board at Camp Dodge, Des Moines, Iowa, as a contract surgeon. In view of the fact that these findings and data are necessarily very incomplete, it would seem better not to even ask the Surgeon General's office for permission to publish them, but rather to leave them unpublished at the present time. No doubt at some later period, after the whole work of enrolling the army has been surveyed, these figures will all be properly correlated by the Surgeon General's office and published. In the meantime, a discussion of the very important phases of heart action, as demonstrated by the examination of these draft recruits, must be of great interest, and it is well for the profession to begin to think along the lines developed as soon as possible.

As a basis of discussion, the following points may be briefly enumerated:

1. Any estimation of heart capacity must include accurate counting of the pulse, standing, recumbent, after stated exercises, and then two minutes later. The character of the response will aid more than all else in determining whether the individual will withstand prolonged effort or not.

2. There is a limit to the capacity of every heart. In a sturdy normal this is arrived at only after the most exhausting and prolonged and heroic effort. In a very large group of people with so-called "unstable' or "irritable" hearts, this limit is arrived at in a very much shorter time, and on occasion occurs after almost any effort.

3. The difficulty of naming this condition arises from the fact that it does not speak for an intrinsic cardiac condition, but is rather an evidence of general fundamental lack of development. "Effort syndrome" is likewise a misleading term, because in addition to effort, emotion perhaps plays an equally strong role

*Abstract of paper presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

in producing symptoms. Neuro-circulatory asthenia, speaking for a broader conception of the condition as understood up to date, seems a better cognomen, and draws attention to the general, fundamental and nervous constitution of the individual.

4. Relatively speaking, the role played by this symptom complex in the rejection of recruits, is coming to assume greater importance than true organic valvular heart disease, and requires greater experience to interpret and properly classify. It must be granted that the personal factor and experience of the examiner will count greatly as a factor in the total.

5. Systolic murmurs as isolated findings, have no significance in determining for or against rejection of recruits, nor is their position, intensity, or points of transmission of any particular consequence.

6. As a cause for rejection, diastolic murmurs heard in the classical areas indicative of aortic insufficiency and mitral stenosis, are of the greatest importance, and are often the easiest murmurs to overlook. It is to be remembered that these diastolic murmurs when typical and distinctly heard, may be always taken to mean an organic heart lesion.

7. Practically no cases of mitral stenosis—with the typical presystolic murmur and thrill at the apex—are encountered in which a clean cut history of rheumatic fever or other infection is not to be elicited. Conversely, great numbers are seen in which suggestive systolic murmurs at the apex, with doubtful cardiac hypertrophy is to be made out, in which there is no such history of rheumatic fever or infection. It is therefore fair to assume that these cases do not represent true valvular disease, and is additional evidence of the untrustworthiness of these murmurs. The importance of a rheumatic history is testified to by the evidence in the English army, that men who have had acute articular rheumatism as a rule are poor soldier material.

8. Cardiac hypertrophy does not occur in uncomplicated cases of mitral stenosis. It is the chief deciding factor in the diagnosis of mitral insufficiency in addition to a rheumatic history. If absent in an instance of aortic insufficiency, uncomplicated, it is additional evidence of syphilitic aortic disease. The determination of cardiac hypertrophy is best arrived at through palpation of the apex beat and estimating the left border of the heart 1 cm. farther to the left from the midline. This method will usually closely approximate the fluoroscopic outline. Percussion is notoriously uncertain.

9. Certain symptoms exhibited by the neuro-circulatory asthenic, such as tachycardia, sweating and a coarse tremor, suggest hyperthyroidism. The suggestion, however, is far more apparent than real. The two conditions are separate and can be differentiated, although it is stated that true irritable heart is seen in the toxaemia of pulmonary tuberculosis and in hyperthyroidism. It may also occur in the convalescence of normal individuals from any acute infection. The discussion should be limited rather to those cases showing the signs of breathlessness on exertion, tachycardia under emotion and exertion, sweating, and a series of vasomotor phenomena, precordial and chest pain, without obvious extraneous causation. Causation is more to be sought for in congenital deficiencies and incomplete development.

10. These cases are not cardiopaths, and great caution should be used in drawing attention to their hearts. No doubt many of them need medical counsel, but a large place should be given in this to a complete analysis of their physical and psychical makeup. Without any direction the most marked neuro-circulatory asthenics have chosen for themselves labor of a non-exhausting type and free of heavy responsibility: waiters, barbers, elevator operators, telegraph and general office employes. Most of them admitted that they had tried heavier work and could not get along. This furnishes us a good suggestion. The old adage of "square pegs and round holes" comes to mind.

DISCUSSION OF THE PAPERS OF DRS. RICHARDS AND TUOHY

DR. C. L. GREENE, St. Paul: I was greatly interested naturally in Dr. Tuohy's admirable presentation of this question of the heart of the soldier. I myself have had the valued opportunity to act in the same capacity at the same camp during the first draft, at the time the first men were coming in. We worked under conditions of great difficulty. Everything was crude; noise was everywhere, and we had nothing to work with except our eyes, ears and fingers. There was no apparatus. Yet, practically, my experience,

and I think our data, would correspond very closely with the figures presented by Dr. Tuohy.

We have had a great many cases of irritable heart which were largely due to excitement, and in part due to the intensive training. We referred those back for a period of ten days, and sometimes two weeks, with the result that most of them came back to us in good shape, with the excitability of the heart removed. We did have quite a number of cases of masked mitral stenosis, that is, atypical cases of mitral stenosis. I think we overdiagnosed those. We did that because of a special warning on the part of the Surgeon General, that he wanted everything of that kind eliminated. We had a number of cases with what appeared to be a pre-systolic thrill, for example, and an accentuated first sound, which I believe were simply excitable hearts with more or less loss of muscle tone, but they were thrown out, anyway, for the good of the Army.

I was delighted to hear Dr. Tuohy say that the soldier's heart is not an entity. If anything was borne in upon me during my work at the cantonment, it was that I was seeing just such hearts as I had been seeing and had been writing about and talking about at this Association and others, for many years.

Just a short time ago I had occasion to review the literature of soldier's hearts. It was enormous. From 1864 to 1917 it was an academic question. All of a sudden it became a most intensely important one, and therefore I found the amount of literature we had up to the time German magazines were cut off—the English, French and so on—was voluminous. It was impossible in fact for me to get through it all. I still have some to go through.

It showed very clearly that defective heart in the case of the soldier is a very complex proposition. You have of course a great many instances of unrecognized valvular defects, unrecognized myocardial disease, and unrecognized infections, leading to myocardial toxemia. And in the foreign armies particularly those seem to have largely gone unrecognized, and they have had difficulties which we have not experienced in the fact that their draft ages were higher, and the element of myocardial degeneration prevailed to a much greater extent than is the case with our youths. Practically all of the cases that Dr. Tuohy and I saw were of the juvenile type, both as to irregularities, in my own set of cases at least, and as to any valvular lesions present.

Then they found abroad, I think, a larger percentage of men breaking down in their preliminary training. No doubt that training was carried on very unwisely. I have no doubt the same thing was true in many instances in our own army. Men not in perfect health were taken from sedentary pursuits and were at once inducted into physical exertion which they were unable to sustain, but which they might have been trained to sustain.

Then, of course, there is a group which breaks down under disease, to which I will not refer, which has been already spoken of by both Dr. Richards and Dr. Tuohy—disease acquired in the trenches; and those that break down in action.

I have been fortunate enough to have had several cases of soldier's heart in soldiers who have actually been in action and acquired their trouble there, and I have been at some pains to draw from them a description of the conditions. We cannot lay too much stress upon that. You have in all such cases the elements of immense shock, tremendous shock, and sustained or recurrent excessive over-erertion.

Let me speak for one moment of what Dr. Tuohy referred to as the congenitally deficient heart. I have talked to you many times about that in the last few years, and I will not attempt to discuss it at any length now. Every country is full of these congenitally deficient hearts. They usually go with congenitally deficient musculature. The greater number of them are cases of congenital visceroptosis and the heart, as well as everything else, is ptotic. They may be trained up to be good hearts. I think one would find, even in research at the front, a large number of dropped hearts with no symptoms arising from them, but on the other hand, a very considerable percentage do not permit of a reserve heart force that will carry them through the severer aspects of war service. That would seem to me to be the proposition.

With regard to the great work which is being carried on by Lewis and McKenzie, and the work of the Commission under Lewis, I was struck by one very peculiar thing, a thing which seemed to me to vitiate to a considerable degree the value of the work. As I recall it, Lewis in his report said that they allowed as representing the normal heart boundary, a distance up to 10½ or 11 centimeters from the median line. If one figures upon that as the normal heart boundary, dilatations are going to go unrecognized in a very large percentage of cases. As I have had occasion to state many times, by using the long distance X-ray method, we have found hearts that would not measure in the median left diameter, over let us say 5½ centimeters. The inference is obvious. If you have certain hearts that measure from 5½ to 6, 7, or 8 centimetres as a maximum normal, and you are working on the basis of a normal which represents 10½ to 11 centimetres, you have a possible variation of nearly 50 per cent. You would have a possibility in other words, of not recognizing a dilatation of 100 per cent in regard to that left diameter. I am surprised that that very simple fact, that easily probable fact, has not been given more attention.

The heart problem in our Army is one of the biggest I think that we have to face, and there is going to be, and there is already, a tremendous amount of cardiac disability.

If I understood Dr. Tuohy, the method of selection was the same during his regimé at Camp Dodge as it was during my own. That is, Dr. Tuohy and the surgeons of the different units passed on the men first. Then we will say the regimental surgeon took a hand. We found in our work an enormous variation in the number of cases, in the proportion of the number of cases rejected by different units. That seemed to mean that some men were catching hearts and others were letting them go through; and those that the careless or the unfit men failed to recognize as defective hearts

went straight into the Army without passing through the hands of any expert carido-vascular man. Such cases are going to have trouble.

With regard to the systolic murmur, unassociated with a history of rheumatism or what not, let me say that I think in the greater number of these cases you are dealing either with a congenitally deficient heart or more often with cases of masked sub-infection, in other words, where you get those murmurs you have an ordinary microbic toxemia. We see that constantly in civil life again and again. My belief is that while a considerable proportion of the men who present such an appearance and such signs as Dr. Tuohy has emphasized will hold up all right, even in infantry service, a very considerable proportion will break down because of deficient reserve, unless the existing sources of sub-infection, hidden foci, are removed—the tonsils, the gall bladder, the appendix, the teeth and all such things that are working in that direction.

DR. GEORGE D. HEAD, Minneapolis: I did not intend to discuss these papers, but the subject I have to present is somewhat allied to this whole question of the neurasthenic individual; and that borders upon some of the problems presented. I have had a little experience in examining between 500 and 1,000 men from the training camp at Fort Snelling, studying them particularly with relation to their fitness for aviation. And while we had a specially selected group of men, our instructions were to pick only the perfectly fit, and therefore of course we encountered the difficulties which have arisen in all of the other camps in attempting to differentiate between persons with organically defective hearts, and those who have the symptoms of circulafory disturbances without the evidence of organic disease.

It has seemed to me that in this whole matter, there is an occasion for the revision of the teaching in our medical schools, with relation to the recognition of organic heart disease. I almost am sure that the average student in our medical colleges is taught to pay altogether too much attention to the objective findings and too little attention to the careful history,

My experience for years, in a large hospital practice and in considerable private work in connection with cardio-vascular conditions, is that the average young man in going over a case for evidence of cardiac disease, neglects his history, neglects to find out much about what has happened to the individual prior to the time of the examination, and rushes at once to the question of whether or not he has a cardiac murmur to deal with. He attempts to differentiate a whole variety of different kinds of cardiac murmurs, and attempts to determine from the accentuation of this sound or the other, the disease present, rushes to his cardiograph and his electro-cardiograph, and fails to even find out many times, whether the individual has had an attack of acute articular rheumatism

I was mighty glad to have Dr. Tuohy's figures so clearly bring out what to me had been a fundamental point in connection with cardiac lesions, and which I was taught as a young man in various clinics to lay great emphasis upon, and which you will find ramifying all through the literature; namely, that one of the most important points in determinig whether an individual has a cardiac lesion or not, is to determine first, whether he has ever had acute articular rheumatism, and having determined that, you are in a fair position to determine when you hear the evidence of cardiac disease, whether or not he has a real organic lesion.

Of course, that does not answer at all the question. as to whether or not these men are fit soldiers, because a man may have myocardial changes due to other infections, such as Dr. Greene has well emphasized. My own notion would be that the vast majority of these young individuals with murmurs probably are persons who have had some type of infectious myocarditis. That does not mean, however, that they may not be made fit soldiers by a proper course of training. Our American notion is to train these men intensively, make good soldiers of them in from three to six months. I do not think that physically this can be done. These men, taken out of civil life, who are not used to these long marches and excessive strain and exercise, ought to be trained gradually into it.

If you have a man with a weak myocardium, due to some infectious disease, such as tonsilitis or otitis-media or typhoid or scarlet fever in childhood, and put him into training, the exercise outlined for him to do must at first be light and the more severe training and drilling taken up only after weeks of the lighter form, otherwise he is going to break down.

These men ought to be put in a group by themselves and trained under medical supervision.

In our experiences with these about 1,000 men whom we examined for aviation, in which I was doing the examining of the doubtful men, we laid down the rigid rule that we would pay no attention to murmurs, that unless we could find that the man had definite evidence of organic change in the way of a definitely enlarged heart, with the signs of organic change, plus a history which would suggest it, we passed him. The only doubtful fellows were those with hearts that were irregular or had occasionally dropped beats, or those that showed a tendency to tachycardia. Those we were not so sure about; for the others, we laid down the very definite rule that if a man was normally healthy and his heart functioned all right, and he had carried on his athletic work,—most of these men were athletes or had been,—no matter what the auscultatory signs in the heart might show we passed them.

DR. H. W. HILL, St. Paul: I would like to ask Dr. Richards the relationship between gas poisioning and the fever associated with it.

DR. E. T. F. RICHARDS (closing the discussion): In answer to Dr. Hill's question, the association is that of infection following the irritation of the respiratory tract, and the fever is secondary to the very severe bronchitis which develops.

Concerning the soldier's heart—when one works in a big military hospital he is very quickly convinced that the heart is in a great many instances merely an index of the individual's general neuro-circulatory condition. Among the reasons for paying close attention to the neuro-circulatory asthenics, and to all soldiers

showing the "effort syndrome," a very important one is that such men are particularly susceptible to shell shock. We found in men brought to the hospital with shell shock, that they were, with few exceptions, of the so-called asthenic type. In our work in France ws were dealing almost entirely with British soldiers who were for the most part from large cities, and many of them were started out in life with defective muscular, bone and nervous mechanisms. This was the type that was the true example of what is best described as the asthenic—the small bony and muscular frame work, the tendency to the visceroptotic, and almost invariably the low blood pressure. Low blood pressures, ranging from 90 to 100 systolic, were a part of the syndrome in such individuals.

Lewis' very definite statement, backed by Sir James McKenzie's at the A. M. A. meeting in Chicago two months ago, that a heart murmur **per se** is not to be emphasized, is, of course, of extreme importance when considering the question of physical fitness for active service. If we had had to debar all men with systolic murmurs, I am afraid that splendid fighting machine —the British Army—would be about 50 per cent less numerically than it now is. Systolic murmurs, both basal and apical, were very common amongst the many soldiers on active service whom we examined, but only when such murmurs were definitely combined with myocardial dilatation or with a pathological arrhythmia did we ever consider that the men should not be returned to duty. We had to absolutely accept it as a fact that the systolic cardiac murmur was a common thing and in itself was no reason for debarring a man from active service.

The infections such as trench fever and infectious jaundice, are amongst the most interesting problems we encountered in France. If there had been time I should like also to have discussed that interesting condition known as trench nephritis. We had a number of such cases during our service. The amount of study that is being given to these conditions is vast and is opening up a big new field in medicine—the most interesting aspect perhaps of active service abroad.

The British Army Medical Service—and very rapidly, I am sure, the American—aims to lay before the profession as many facts as possible concerning conditions that are met with abroad. For this purpose there are now being prepared in book form several concise monographs dealing with some of the most important conditions encountered in active service. Every medical man who expects to get into the medical game abroad —and certainly no one should miss it—should equip himself as far as possible beforehand with a working knowledge of the problems he will meet, for as soon as he reaches the War Zone such information is invaluable.

DR. E. L. TUOHY (closing the discussion): I am sure the absence of discussion on trench fever, Dr. Richards, is simply and solely because you presented it so well that nobody could add much to it, and none of us have had any experience with it. Contrarywise, we have all had a great deal to do with this so-called "irritable heart." Verily, one must "watch his step" in presenting a subject such as I have here today in the presence of so many real authorities.

I would not wish to give Dr. Plummer the idea that I consider these cases presenting "irritable" heart, either with or without goiter, or a full neck, are in any way due to hyperthyroidism. It would seem that the two conditions can be rather well differentiated. When these men are quiet and free from emotional stress, their hearts act as normal as anyone's. It is only under the influence of emotion and exertion, or the two in conjunction, that the signs appear.

There are a few capital mistakes made by the average practitioner: In life insurance examinations particularly, many people are erroneously judged on the basis of cardiac murmurs; functional tests are not properly appreciated; hyperthryoidism is apt to be over-diagnosed.

The difficulty with us in the beginning of the work, when the cases were referred to us by the line officers, was that they brought in all the cardio-respiratory and others without clinical significance, and many of the softer diastolic murmurs indicative of aortic insufficiency and mitral stenosis were overlooked. One must be careful in the matter of mitral stenosis not to confuse a short thrill at the apex in systole with a true presystolic thrill. The former has no significance.

The teaching in our medical schools is partly responsible for the undue prominence given to murmurs, their character, intensity and conduction. Many points arise, which of course cannot be discussed with value in an incomplete survey such as this. For example, in an individual with persistent tachycardia, with loud murmurs over the heart, whom you put to bed with rest and digitalis, and in whom you find no change even in a relatively short time, be on the lookout for hyperthyroidism.

The blood pressure is undoubtedly important. Practically all these asthenic individuals have a low blood pressure, but what is more important, a low pulse pressure. I think the general tendency for hyperthyroid cases is to show an elevation of the blood pressure. Is that not true, Dr. Plummer?

DR. PLUMMER: Hyperthyroidism is increased metabolism, and that means more work, and there is consequently a higher blood and pulse pressure.

DR. TUOHY (continuing): You may ask why an individual with a true mitral insufficiency of rheumatic origin shows an enlarged heart, whereas these cases with a much faster pulse on exertion do not show it. The difference is marked, and carries a subtle point: a well compensated case of either mitral stenosis or insufficiency under exercise will frequently show no great advance in the pulse rate from the recumbent rate to that after exercise. If a considerable increase does take place, very commonly the heart will beat rapidly on again resuming the recumbent position only for a relatively few beats, when there will be a sharp contrast and the beat will, again, approximate that which obtained before the exercise. The chief reason for taking the pulse in the recumbent position before exercise is seen in the true irritable heart, because a man with the irritable heart in the standing

position will often have quite a high rate, and there will not be the difference on exercise which really occurs when the test is properly done. Then, again, the return to normal is slow, and there will not be the quick transition between the advanced rate and that which obtained before the exercise, as contrasted with a true organic lesion. Most hypertrophied hearts have previously dilated during periods of incompetency.

It would require a lot of further discussion and evidence to satisfy me on the matter of the source of these so-called accidental or murmurs without significance. I know they are variously ascribed to the myocardium, the viscosity of the blood, etc. Most of the army doctors I came in contact with were greatly confused on this point, and usually refused to accept a diagnosis which did not tell them why an individual had a murmur. If a systolic murmur at the apex was not due to mitral insufficiency, what was it due to?

In life insurance examinations and in the examination of people in civil life, I am satisfied that we start a lot of them off wrong by diagnosing a heart condition which is not a heart condition at all. The individual who is congenitally asthenic, who has low muscle tone and nerve tone and everything else, goes to a doctor on account of pain over the chest, and that doctor says, "Now, your trouble is in your heart"; and forever afterwards he has that planted firmly in his mind, and hence the name neuro-circulatory asthenia.

"Irritable heart" is not a good term, because if a man is being invalided home on account of that he carries that and cherishes it, and he will go to one doctor after another until he finds someone who will treat him for his heart. The difficulty with the term "effort syndrome" is that it is not effort alone but excitement that produces it. These individuals fifteen-sixteenths of the time are perfectly normal. It is emotion and exertion that most of all tend to bring out pain in the chest, giddiness, sweating, breathlessness and the characteristic pulse. We must give that something a name, but it mustn't have anything indicative of the heart in it, because in my opinion they do not need cardiac therapy.

Whether these hearts actually dilate under exercise or not is a mooted question: I am inclined to believe they do, but I doubt whether it is a real cardiac dilatation, but rather an overfilling of the loosely toned up heart muscle, and if you should examine these men day after day and find that the heart width varied from time to time you should not be surprised.

Dr. Greene is right. We have no right to put up any set figure as the normal for a heart width any more than we have for the length or width of a man's foot or arm; that is a problem for every individual or rather his ancestors to decide upon for him. Think of these irritable hearts in your routine work; do not think of them as a soldier proposition alone. You will find it in many women, in many so-called "neurasthenics," and they are going to be at their best when everything about them is good. At other times they are unfavorably influenced by loss of sleep or any operative procedure which an enterprising surgeon may negotiate with them, and by anything which interferes with their economic status or with their happiness in life.

PROSTATIC CALCULI.*

E. S. JUDD, M. D., AND J. L. CRENSHAW, M. D.,
Rochester, Minn.

A review of the records of the Mayo Clinic shows that from January, 1910, to July, 1918, 3,180 patients were examined in whom symptoms were being produced by a pathologic lesion in the prostate gland. Of this number, 1,825, or considerably more than one-half, were not operated on, and in the remaining 1,355 a partial or complete prostatectomy was performed. Of the non-operated cases, some were inoperable because of too extensive malignancy, while in others there were contra-indications to operation because of other complications and general conditions. A considerable number of the patients still come for treatment when the prostate has ceased to be the important consideration, and at a time when the relief of the urinary symptoms would be of no avail. Eleven hundred and seventy-one of the operations were prostatectomies performed for urinary obstruction caused by benign hypertrophy; 118 were for carcinoma, and 14 were for tuberculosis. Included in this group of 1,171 cases are all of those in which a true hypertrophy existed and also those in which there was a large or small degree of hypertrophy in conjunction with the prostatitis. In most of the cases of simple prostatitis the patients responded fairly well to conservative treatment, but if hypertrophy was present so as to interfere with the emptying of the bladder, it was necessary to operate. At times prostatitis apparently occurs in a special form, in that as a result of this type of inflammation stones are formed and deposited in the substance of the gland. It is to this type of prostatitis and the formation of these calculi that I wish to call attention, and also to contrast the condition with one in which stones that are not true prostatic stones become lodged in the prostatic region. In this same period, eight and one-half years, we have seen and treated, or advised treatment in, 20 cases of pro tatit s in which true prostatic calculi were present, and also 11 cases in which it was necessary to operate for the removal of false prostatic stone. In most instances the false stones were removed

*Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

by intra-urethral methods. These cases will not be referred to in this paper.

The occurrence of prostatic calculi is rare as compared with the occurrence of calculi in other parts of the urinary system. Because of the fact that in a considerable percentage of cases the symptoms are not directly owing to the stone and also that the occurrence of the calculi is not suspected and not determined, in many instances the condition is overlooked.

The literature on this subject is made up largely of reports of single cases, although within the last year Kretchmer has collected in all, including his own, one hundred and seventy-three cases. By some specialists, such conditions are considered to be so rare as to have no clinical importance, but those who have given the subject the most thought maintain that while the condition is rare, it is frequently not recognized, which is inexcusable at the present time. When the condition is diagnosed, it can be completely remedied by the proper measures.

Cases of prostatic calculi may be divided into three distinct groups. In two of these groups are cases of true prostate stones as they are formed immediately within the substance of the gland; in the third group the stones are formed elsewhere, usually in the kidney, sometimes in the bladder, possibly in a diverticulum of the urethra, and from there are passed into the prostatic urethra. These are known as false prostatic stones. In Group 1 we placed the cases of true prostatic calculi in which the stones are the result of peculiar forms of prostatitis. There may be one or a number of stones formed at the same time. They evidently arise from the acini or ducts of the gland, and while they are usually small, they may attain to considerable size. These calculi have the concretion and sediment of the prostate gland as a nucleus, and this is usually covered by layers of phosphates. There may be some urates as well in the formation, but the nucleus is considered the distinguishing feature. Examination of the nucleus for prostatic material will definitely determine whether or not the stones were formed within the prostate gland. Regarding the formation of such stones, Lund says that hard, microscopic bodies called corpora amylacea form in the prostate at any age. They consist of sediment from the prostatic secretion, and at times become the nucleus for stone formation. Mineral salts, chiefly phosphate of lime, the triple phosphates, and bicarbonate of lime make up the outer coat. The presence of stones in the gland, and also the presence of inflammation in the gland, cause considerable absorption and destruction of gland tissue so that it is usually but a honey-combed formation with calculi projecting from the different compartments. Often there are also multiple abscesses. Unquestionably, the prostatitis is the important feature and stone formation is probably secondary. While the stones are generally distributed throughout the gland, they may occur in isolated pockets outside the gland proper, and some cases are reported in which the stones were located in pockets in front of the rectum and were removed by incision into the wall of the rectum.

The symptoms are those of a severe prostatitis and often the patient is treated for the inflammation, unaware of the fact that stones exist. If the stones project into the urethra, there will usually be urinary obstruction. In some of the cases, stones have passed through the urethra, and sometimes there is a history of hematuria, though these features are not at all diagnostic. One case is mentioned by Lynn Thomas in which the patient passed one hundred and one stones. Pain is prevalent and is usually severe and of the same character as that of ordinary prostatitis, except that it is apt to be more severe. There is much tenderness throughout the perineum and especially on rectal palpation of the prostate, even when stones cannot be felt. The diagnostic characteristics lie in the character of the gland on rectal palpation and in the shadows shown in X-ray examinations of this region. Frequently the condition can be definitely diagnosed by palpation, as the stones may be felt and there is a sense of crepitation on pressure. If the stones are well buried in the gland substance or are lying in the prostatic urethra, they may not be felt. Practically all such stones will cast shadows on X-ray examination so that the diagnosis is very accurate from this method. It is important that an X-ray examination should be made in all cases of protracted or uncertain prostatitis.

In Group 2 we have classified those cases in which the calculi, in all probability, have their origin in the acini and ducts, the same as in Group 1, but instead of being associated with an inflammation in the gland, there is an associated hypertrophy. In these cases the hypertrophy is probably the essential pathology and is the cause of all or nearly all of the symptoms. Often there is nothing to call attention to the stones until the hypertrophied process is enucleated from the gland. The stones usually occur in the form of sand, and while this may be generally distributed through the hypertrophied tissue, more often the most of it seems to be between the hypertrophy and the capsule. Such stones rarely attain to any considerable size, and in all probability are not in themselves responsible for symptoms, although they should be taken into consideration when present with the hypertrophy. They are usually numerous and have the same formation as the larger stones. Sometimes this sandy material may be felt on rectal examination, and sometimes the small stony particles are grouped together so that they cast a shadow on X-ray examination.

Special mention should be made of the differential diagnosis between prostatitis, hypertrophy with stone formation, and carcinoma of the prostate. Sometimes the differentiation is quite difficult in that the hard nodular prostatic carcinoma presents much the same sense of feeling as the stones. In such cases the cystoscopic examination may be very helpful in settling the diagnosis, as in the event of prostatitis it reveals the dilated prostatic ducts and often the stones will be seen projecting from them. Tuberculosis of the prostate may at times simulate prostatitis with stones, but more often the differentiation is not difficult. An X-ray examination may be necessary in order to differentiate the conditions and it is essential that the exposure should be made low enough to take in the pubic symphysis.

In Group 3 are the cases of false prostatic calculi in which the stone is always found in the prostate, usually in the prostatic urethra, but is not a true prostatic stone. While it is not always possible clinically to distinguish this condition, nevertheless the early history is frequently suggestive. The stones usually originate in the kidney, bladder or diverticula of the urethra, and in many instances there is a history of former renal colic during the time the stone passed, or if the stone has been in the bladder, the symptoms produced by the irritation there will suggest the presence of a stone. The stones pass from the bladder into the prostatic urethra and become lodged there. The symptoms at that time are great pain and urinary obstruction. The stone can usually be felt by sound or cystoscope. Whether the stone is a true prostatic calculus or a false one often cannot be determined until it is removed and examined. The stone which forms in the kidney is largely a urate formation and can readily be distinguished from a prostatic calculus. The X-ray will disclose the presence and location of these false prostatic stones, which may become very firmly lodged in the tissues of the prostatic urethra and require considerable effort to remove them. In many instances it will be necessary to accomplish this by an open operation, and great care must be exercised to preserve the bladder sphincter. In several instances in our series, it has been difficult to remove these stones without producing considerable trauma to the surrounding tissues but in a number we were able to remove the stones lodged in the urethra very easily with urethral instruments, and of course this should always be tried first.

The treatment of all types of prostatic calculi is to remove the stones and remedy the accompanying condition. In cases of true prostatic calculi in which there is usually a severe prostatitis, I believe that treatment should be radical. In some instances the condition can be relieved by massage and irrigation, the stones being forced into the urethra and washed out. However, continuing this treatment over any length of time is not justifiable and if the stones are not easily removed an open operation is indicated. Some surgeons have advised, as an operative procedure in these cases, a perineal prostatectomy, and scraping out the stones and draining the infected prostate. This method of procedure may be satisfactory in some cases, but it appears, from our experience, that under ordinary circumstances it is much preferable to do a transvesical operation. I believe that in this way we are more

certain to preserve the bladder sphincters intact, and also in many of the cases the prostate will be so extensively infected that the greater part of it should be removed to insure a complete cure and to prevent a return of symptoms. In many instances the prostate is so completely destroyed that it must have lost all its function; it is of no service, and may make trouble in the future. If the inflammation is not extensive, stones may be removed easier and with less danger of other difficulties by transvesical operation than through a perineal incision. It is not necessary to operate especially to remove the sandy material which is always found in conjunction with some hypertrophy of the gland, but when this condition complicates a hypertrophy it is well to be careful to remove all of the sandy material from the prostatic capsule. This can be done easily after the enlargement has been enucleated. Where false prostatic calculi pass down the urethra and can be removed by the cystoscope or other urethral instruments, this should be done, but if they are firmly wedged into the urethra, it will be best to remove them by transvesical operation.

Prostatic calculi are in reality complications arising in cases of prostatitis, hypertrophy of the prostate, and kidney and bladder stone. While they are rare, they are common enough, all cases considered, to command considerable attention. By bearing in mind that calculi may complicate any one of these conditions, that with the present methods of examination they may be recognized, and furthermore that the treatment of the condition is generally entirely satisfactory, we should be able to add a great deal to the relief of patients suffering from prostatic calculi.

Technic of Clinical Data on the 20 Cases of True Prostatic Stones.

Patients: 12 operated on, 8 not operated on. Youngest 34 years; oldest 76 years; average, 57 years.

Symptoms: 4 weeks shortest duration; 37 years longest duration; 15 years average duration; 2 had no symptoms.

X-ray: Positive in 15; negative in 1; questionable in 1, and not made in 3.

Stones: Palpable per rectum in 16; crepitation per rectum in 6.

Number of stones: 1 in one case; 3 in one case; many in 18 cases.

Size and location of stones: 1 case, a solitary stone, 2 by 3 cm. in the substance of the gland; 4 cases, medium size stones in the substance of the gland; 9 cases, many small stones in the substance of the gland; 1 case, one large, and many small stones in the substance of the gland; 1 case, many small stones in a pocket of the left lobe; 2 cases, sand; 2 cases, no record.

Condition of gland: 8 cases, adeno-fibromatous hypertrophy; 8 cases, chronic prostatitis; 2 cases, hypertrophy and chronic prostatitis; 1 case, acute prostatitis; 1 case, normal.

Previous Neisserian infection: 8 cases, positive; 10 cases denied; 2 cases not recorded.

Previous operations or diseases other than Neisserian infection, influencing the condition: 2 cases, periurethral abscess (cause unknown, 1; trauma, 1); 2 cases, history of renal colic, stone in the prostate but not in the kidney; 5 cases, stricture (Neisserian infection, 4; trauma, 1; urethrotomy, 2; sound, 2); 1 case, renal stones (nephrectomy); 1 case prostate stone (prostatotomy), right castration (cause unknown); 1 case, Raynauds' disease; 8 cases, no operation.

Genito-urinary complications (other than prostatic): 8 cases, none; 2 cases, bladder stone; 1 case, bladder stone and diverticulum of bladder; 1 case, perineal abscess and fistula and stone in the right kidney—infection of the left kidney; 2 cases, traumatic stricture and fistula; 5 cases, stricture; 1 case, prostatic abscess and post operative sinuses.

Urinalysis: 19 cases, acid; 1 case, alkaline; 9 cases, red blood cells; 19 cases, pus; 1 case, negative.

Symptoms: 13 cases, pain; 13 cases, frequency; 13 cases, difficulty; 4 cases, hematuria; 3 cases, stones passed (1 case, 26 stones; 1 case, 6 stones); 2 cases, epididymitis; 4 cases, incontinence; 9 cases, residual (not tested, 7); 2 cases, no symptoms. In some cases urgency and burning.

Operation: 1 case, perineal prostatotomy; 1 case, suprapubic prostatotomy; 8 cases, suprapubic prostatectomy (complete); 2 cases, suprapubic prostatectomy (partial).

The Clinical Data in 11 Cases of False Prostatic Stones in Which Operation Was Done.

Cases: 11; youngest 16 years; oldest 70 years; average, 44 years.

Duration of symptoms: 5 months shortest duration; 18 years longest duration; 7 years average duration.

X-ray: Positive in 6; negative in 1; not made in 4.

Stones: Palpable per rectum in 6; indeterminate in 1; not recorded in 4; crepitation per rectum in none.

Number of stones: Solitary stone in 9 cases; multiple in 2.

Size and location of stones: 1 case, one stone in prostatic urethra; 1 case, multiple perineal fistulas and stone in prostatic urethra above stricture; 1 case, one phosphatic stone, medium size, in a pocket in posterior urethra; 1 case, one large sharp stone, mucous membrane not lacerated, prostate flattened out by stone; 1 case, one kidney stone wedged in prostatic urethra after fulguration of left meatus for its removal, removal through cystoscope; 1 case, one large irregular stone in prostatic urethra; 1 case, one stone one-half inch in diameter, rough, irregular, impacted in sacculated urethra; 1 case, many phosphatic stones and necrosis, prostatic urethra packed with stony material; 1 case, dilated prostrate full of stones, impermeable stricture; 1 case, one large irregular stone, urethra dilated to size of bladder; 1 case, one large, irregular, pear-shaped stone, large dilatation of urethra above stricture.

Previous Neisserian infection: 4 cases, positive; 3 cases, denied; 4 cases not recorded.

Previous operations or diseases other than Neisserian infection, influencing the condition: 1 case, perineal prostatectomy; 1 case, suprapubic prostatectomy; 1 case, perineal exploration; 1 case, stricture of urethra; 1 case, stricture and bladder stones (operated); 1 case, large bladder stone (operated); 1 case, cystitis; 1 case, ruptured bladder; 1 case, ruptured urethra; 1 case, left kidney colic and later bladder irritation; 1 case, negative.

Present genito-urinary complications: 3 cases, negative; 1 case, multiple bladder stones; 1 case, contracted bladder; 1 case, branched stone and pyonephrosis of left kidney; 1 case, cystitis and pyelonephritis; 1 case, necrotic fistula, fractured pelvis, bladder stones and pelvic abscess; 1 case, perineal fistula and stricture; 1 case, anterior stricture; 1 case, stricture and left kidney stone.

Urinalysis: 6 cases, acid; 4 cases, alkaline; 1 case not reported; 7 cases, red blood cells; 10 cases, pus; 1 case not reported.

Symptoms: 11 cases, pain; 11 cases, frequency; 11 cases, difficulty; 5 cases, hematuria; 5 cases, passing stones; 2 cases, incontinence; 1 case, residual; 3 cases, not tested.

Operation: 5 cases, suprapubic cystotomy; 3 cases, perineal section; 1 case, suprapubic cystotomy and urethral dilatation; 2 cases, stone removed through cystoscope.

Probable origin of stone from history and pathology: 6 cases, bladder or dilated urethra; 2 cases, bladder; 3 cases, left kidney.

REFERENCES

1. Kretschmer, H. L.: True prostatic calculi. Surg. Gynec. and Obst., 1918, xxvi, 70-76.

2. Lund, F. B.: Prostatic concretions and calculi. Boston Med. and Surg. Jour., 1911, clxv, 170-172.

3. Thomas, J. L.: Prostatic calculi: Three cases illustrating a new method for their successful removal by the combined suprapubic and perineal routes. Am. Jour. Urolog., 1909, v, 224-228; also in Lancet, 1909, i, 1453-1454.

DISCUSSION

DR. F. A. DUNSMOOR, Minneapolis: After such an enormous experience as that related by the essayist, no one should try to make any other comment than to report additional cases along the same line, although the number may be insignificant as compared with the number of cases mentioned.

While Dr. Judd was reading his paper I recalled the first case I operated on for bladder trouble. The patient was a man by the name of Adams who had fallen from a steeple. He had previously undergone an operation for stone in the bladder by the crushing method. I presume this had something to do with the type of cases Dr. Judd mentioned, namely, the false stone, because I operated on him subsequently, in the year 1878, and found a prostatic stone as the essayist has described.

The last patient I operated on for prostatic stone was a clergyman, and this was also subsequent to an incomplete prostatectomy. This patient was referred to me during the past year. It has never been my fortune, after I have made a diagnosis of prostatic stone with hypertrophy, to have adopted the method which has been so successful with Dr. Judd, namely, operating transvesically. When I have made a diagnosis of prostatic stone I have approached it from the perineal side or, if possible, I try to dislodge the stone and take it out per urethra.

SLIGHT SYMPTOMS IN GALL-BLADDER DISEASE WITH MARKED GROSS PATHOLOGICAL LESIONS.*

J. S. Holbrook, M. D.,
Mankato, Minn.

Surgery reveals such gross pathological anatomy of the gall bladder in many instances where little change is expected that I wish to report a few cases of this character.

It has often been discovered that the gall bladder may contain gall stones (for years probably) which have caused no definite symptoms, such as pain, jaundice, etc., and it would be a fortunate thing if someone would tell us of better methods of diagnosis of gall-bladder diseases which have caused only slight or reflex symptoms. It is not only the large solitary stone which makes the gall bladder its home, without causing much distress, but we may find almost any condition.

Among my recent cases which have come to operation I shall mention five varieties and give a brief history of each:

1. The large solitary stone.
2. The putty-like mould containing soft stones—possibly the initial stage of the monolith.
3. The numerous small smooth stones.
4. The numerous small rough stones.
5. Carcinoma.

The case which well illustrates the first variety was a lady of 57 years of age, who had had stomach trouble for 30 years. She had never had typhoid fever. Had never previously had tenderness over the gall bladder, no vomiting, no severe attacks of pain, but constant stomach distress. She had always been thin and anaemic—one sister and one brother had died of pulmonary tuberculosis, another sister of anaemia—and for years she had been under the care of various physicians trying to get strong and get over her stomach distress. For a few days before presenting herself she had had tenderness over the gall bladder and sharp, shooting pains running to the right shoulder blade. There was a large mass in the right upper abdomen. Urine examination showed a trace of albumen and a few finely granular casts. Functional kidney test gave 95 per cent return of the phenol-sulphonethalein. Haemoglobin, 85 per cent; W. B. C., 13,400.

Stomach examination by fluorscopic rays, showed a practically normal condition. A test meal analysis showed hyper-acidity.

The diagnosis when we saw her was simple because of an acute attack with typical symptoms. But previously she had been prescribed for many times and she had no suspicion of disease of her gall bladder.

Operation revealed a large single stone contained in a large, thick gall bladder. Patient was entirely relieved of old stomach symptoms by cholecystectomy.

Case 2. This patient was a robust man of 38 years, who at 31 years had had one night of pain, and then no distress nor suggestion of abdominal trouble for 7 years, when a second typical attack came on. The gall bladder was about twice normal size and completely filled with a putty-like mould containing several soft stones. Cholecystectomy was performed, and complete uninterrupted recovery occurred, except for slight jaundice for about two weeks after the operation. This man had no indigestion during the interval between attacks. He could eat anything and everything.

Case 3. This was a woman who was tired out all the time. She had had stomach trouble for years in Minnesota. Then went to California hoping to get relief, but was worse and came back this spring. She is married, 33 years of age, never had typhoid fever, but "grippe" three times in past six months. Had had fears of pulmonary tuberculosis for she had some cough and slight pain through the right lung and bad family history. For years she has had to be careful of her diet, had distress about stomach, also tenderness over caecum and sacral backache. She never was jaundiced, never had pain in gall bladder region shooting to shoulder blade, and never any vomiting. Physical examination showed no lung involvement on percussion or auscultation. There was absolutely no abdominal tenderness, but there was a retroverted uterus causing sacral backache. The urine was negative. Stomach analysis: Free H. C. L., 17 per cent; total acidity, 37 per cent; otherwise it was normal. X-ray of lungs showed a shadow of an old in-

*Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

volvement near center of right lung, otherwise they were normal. Stomach rather low. It filled readily and there was good duodenal cap.

On account of backache and history of uneasiness about appendix, an operation to correct retroversion of uterus and to remove appendix was done.

Examination during operation revealed gall bladder full of stones. Cholecystectomy was done, removing a slightly thickened gall bladder containing 411 small and 1 large smooth stones.

It seems strange that these small stones caused no acute attacks of gall bladder colic. Patient now says she can eat anything and everything, whereas before she had to be careful all the time.

Case 4. This case was that of a young telegraph operator and depot agent who came in during an acute attack with typical symptoms of gall bladder disease. For years he had noticed slight pains only when he would lean against his desk. These stones were the small, very rough variety. Why hadn't these caused severe spells?

Case 5. Woman aged 42, who for a year had had occasional heavy feeling in the epigastrium. No sharp pain, no vomiting, bowels regular, backache often, slight tenderness over the epigastrium and along the right costal arch. No colic attacks. Slight loss of weight. Never jaundiced. Exploratory operation advised because of loss of weight, though local symptoms were so indefinite that we doubted gall bladder involvement.

We found inoperable carcinoma, involving the gall bladder and the whole right lobe of the liver, which caused her death in a few weeks.

All five of these cases showed marked pathological changes, and had had gall stones for years probably, yet none had had typical attacks previously except case No. 2 who had had one short attack 7 years ago and had been in excellent health since.

DISCUSSION

DR. WILLIAM R. BAGLEY, Duluth: There is one point I would like to refer to and that is the character of these stones. There seems to be in my experience a peculiar formation which is always found in these cases which have an acute origin, and the specimen in the second case the doctor speaks of exemplifies the putty-like consistency of the stone. I have had at least two cases similar to the second one that he has related. Previously these patients had had attacks of gall-stone colic which were quite typical, and then one of them, at least after a period of five years, has had no typical gall-stone colic. He has had more or less digestive disturbance and gas, recently he was taken with typical attacks of gall-stone colic which subsided and finally developed into a cholecystitis. Upon operation we found numerous stones agglutinated by this peculiar yellowish putty-like content—precipitated bile.

I have a specimen in my pocket from a woman confined about six weeks ago. She had her first attack of gall-stone colic about three weeks ago, and since that time has had practically continuous attacks. Upon operation I found a very much inflamed gall-bladder, and fifty or sixty small mottled yellowish white stones. These stones were soft, giving evidence of rather rapid formation, and I think we will find that some special kind of the bacterial infection has a specific precipitant action upon the bile which produces this particular character of stones.

DR. E. Z. WANOUS, Minneapolis: The essayist has brought out one point well worth remembering, and that is the fact that any symptom that is referable to the stomach must of necessity be a reflex from some other part of the abdomen. Unquestionably every one of his cases had stomach symptoms when they presented themselves, and this is a point that is well worth remembering. An irritable appendix, gall-stones, any irritation in the abdominal cavity, will frequently give you symptoms referable to the stomach.

The second point I want to mention is the fact that it is not the foregin body in the gall-bladder that produces the pain; it is the pressure back of the foreign body, and in many of these cases we have no pain as we know when we go into the abdomen for other pathology. We find gall-stones without any symptoms. When the pressure is established, then we have our symptoms, and in these cases that the doctor reports the probability is that the patients presenting themselves for stomach conditions did not reach the stage where the pressure was established back of the gall-stones which would give typical gall-stone colic.

THE SURGICAL IMPORTANCE OF ABDOMINAL ADHESIONS.*

WILLIAM R. BAGLEY, M. D.,
Duluth, Minn.

It is quite possible that the influence exerted upon the health and comfort of the individual by abdominal adhesions is overestimated.

It is possible that some surgeons are right in their contention that adhesions are overestimated and should be more largely ignored.

It is most disconcerting, however, to perform a very successful operation and have your pa-

*Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

tient persist in a new line of symptoms in the same locality. Taking for granted that your original diagnosis was correct, what gives the new pains? Are your patients with these new pains all neurasthenics? Have you ever had to interrupt a previously uneventful operative recovery by an operation for acute intestinal obstruction due to adhesions? Is it unlikely that there are not fractions of partial obstructions which give symptoms? How many of your patients give a history of abdominal inflammation following which they have never felt normal?

It is quite possible that adhesions (not necessarily in the acutely sensitive regions) which in any way retard function or bring abdominal tension on mesenteric vessels and nerves are exerting a constant nervous influence which as surely undermines nervous stability as the proverbial drop of water which wears away the stone.

We recognize that many adhesions have originated as a protective measure. They wall off such acute infective processes as appendiceal abscess, gastric ulcer, pelvic infection, tubercular foci, thus saving the individual's life, but after so doing, with the original process dead, they are of no benefit.

X-ray observations will show a sluggish bowel action in the immediate vicinity of adhesions and they can be considered a factor in some cases of constipation.

The inhibiting influence upon peristalsis of an irritable appendix is recognized, but cecal adhesions as the result of former acute peritonitis in this region add much to the loss of efficient contraction and from an operative standpoint, unless actual resection is contemplated, may afford little hope of relief, because of the rigidity of bowel due to their great extent.

Pain in this locality after removal of the appendix is most common in those cases that have a cecum with long mesentery and anterior abdominal wall adhesions (generally at the incision point) which tend to limit cecal mobility especially upon exercise. In these cases operation is most satisfactory.

Another post-operative finding is the ileocecal kind (Lane's) which was possibly overlooked at an earlier operation or was established in the inflammatory process incident to operation.

A recent case of mine operated upon for appendicitis two years ago, with dragging, crampy, partially obstructive pains persisting ever since the operation, showed band-like adhesions from the incision site to a deep-pouched cecum with ilium closely adherent from valve to bottom of sac, a distance of four inches. The ilium then folded back upon itself for an equal distance being firmly united from mesentery to center of circumference. Relief from symptoms was immediate. Adhesions attached to the appendix itself constricting its lumen, interfering with drainage, or making the appendix the anchor of a loaded cecum, give symptoms which even the laity recognize and for which they demand operation.

Perigastric adhesions may cause pain especially if associated with active ulcer and can be a factor associated with ulcer near the pyloris in stomach dilatation.

Adhesions with healed ulcers of the stomach or duodenum produce few symptoms unless there is a tendency to obstruction. Adhesions to the gall-bladder, even though it has no active disease process, will give discomfort and demand attention if they render the gall-bladder an anchor point from which is exerted a pull.

Many cases of cholecystotomy are rendered most uncomfortable upon any exercise by adhesions between abdominal incision and gall-bladder and the digestive disturbances often equal chronic cholecystitis. Removal of the gall-bladder will give these people relief. Adhesions following inflammatory troubles and operations which involve this region must be considered as a cause of jaundice. Compression or kinking of the common duct by adhesions is not an unheard of condition.

In children and young adults the most common cause of intestinal obstruction is from adhesions due to appendicitis, tubercular peritonitis and tubercular mesenteric glands. Add to this the adhesions resulting from inflammatory pelvic troubles in women and we have the source of the great percentage of obstruction.

It is in the pelvis and particularly the female pelvis that adhesions play their great role.

The pelvis is the catch basin for all infection higher up as well as that developed locally. Infected contents from ruptured gastric and duodenal ulcers, gall-bladders and appendices grav-

itate to this low point and exert their greatest action.

The surprising thing is that abdominal contents ever do escape from the gluey twist in which they are so frequently seen.

In a recent case of old healed tubercular peritonitis discovered incident to a pelvic condition also tubercular, practically the whole small intestine could be picked up by one hand and still there had been no intestinal colic or obstructive symptoms since 19 years of age. The history would register this as having existed for about twenty-seven years. From 15 to 18 years of age she had been pronounced tubercular and had a great deal of abdominal pain. Menstruation had always been painful.

Pelvic adhesions frequently distort the uterine position so that obstructive dysmenorrhea frequently results. Much of the pelvic pain following inflammation of this region is undoubtedly due to the tension in the organs caused by the disturbed circulation from the binding pressure of adhesions. Stricture of the uterine end of the Fallopian tubes and adhesions closing the fimbria form pyo- and hydrosalpinx.

The closure of the Fallopian tubes after a natural cure of tubercular peritonitis or one where simple drainage was done, results some time later, probably in a large per cent. of the cases, in accumulation of the typical tubercular deposits which increase the size of the tubes so that they are recognized and surgically treated.

Many ovarian cysts are entirely due to disturbed circulation and the inability of one time normal Graafian follicles to rupture and empty their contents owing to adherent tissue which resulted from some former or present inflammatory condition. Inflammatory thickening of the ovarian capsule will result in the same condition.

The elimination of adhesions following operative work should be an earnest consideration of the surgeon.

To accomplish this:

First make as small an incision as can be worked through with accuracy.

Get more of your sutures covered especially those not of plain gut.

Utilize especially the sigmoid and omentum in covering all raw surfaces, not that these tissues are immune to the disadvantages of adhesions, but that they are less so than the other abdominal contents. Keep the small intestines as remote as possible from the field of operation. In hysterectomies make a long flap of the peritoneum on the anterior surface of the uterus and cover all raw surfaces.

Utilize and encourage a frequent change of position in bed, not overlooking the raising the foot of the bed in pelvic cases where permissible.

I believe the abdominal dressing can have an important bearing upon adhesions. The primary object of your abdominal dressing is to re-enforce your sutures and protect the incision area from outside contamination. I believe in firm pressure at this point, but as frequently dressed the whole abdominal pressure is equalized, and shifting of abdominal contents, interference with which is a detriment in most of our cases.

It is not my intention to state that all subjective symptoms that suggest the possibility of adhesions should be operated upon, but given a patient with persistent localized symptoms, especially with a preceding history of inflammation or operation, and they are entitled to the doubt and an operation.

Failure to take every precaution against the formation of adhesions lays you open to the criticism of a one-time practitioner who solemnly informed the grieving friends that the surgeon had not put the bowels back right.

DISCUSSION

DR. THOMAS E. WILLIAMS, Eau Claire, Wis.: Although I am not now a member of the Minnesota State Medical Association, I formerly was and feel quite at home, and this question of abdominal adhesions was very thoroughly threshed out in June in Chicago. I think any of us who have seen Dr. Bagley work would have great respect for the manner in which he handles the abdominal contents. This subject was thoroughly discussed in Chicago and important points in connection with postoperative adhesions were brought out.

I remember in my hospital days in St. Paul of one case in particular that was operated on seven times, and I think I witnessed seven of these operations. They were performed by different men, and the diagnosis was one of adhesions before operation was undertaken. In those days postoperative adhesions were said to be due to a great deal of trauma, and especially adhesions of the omentum. When a man opened the abdomen of a patient and found the great omentum adherent, he smiled and thought he had found the cause of the woman's trouble. This woman who had her abdomen opened so many times had a mania for operations, and

she always found receptive physicians who were anxious to open her belly. Every surgeon who opened her abdomen and found adhesions thought they were the cause of her trouble. But the woman's trouble was in her head.

There was one point that Dr. Bagley brought out with reference to making use of the great omentum to create adhesions. Dr. Charles Mayo brought out the point at one time that it was never adhesions of the great omentum to any organ that caused symptoms, and that we should lay especial stress on not removing the great omentum even though it was adherent to things; that we should leave all the great omentum where we possibly can because it is the greatest source of protection that the abdomen has. Dr. Mayo stated that the anti-bacterial property was in almost direct proportion to the size of the omentum in many cases, and I would like to lay special stress on the point brought out of utilizing the great omentum to cover up adhesions of the parietal peritoneum, especially those in the vicinity of Lane's kink, and I feel that if the omentum is utilized you will get some wonderful results.

DR. W. A. COVENTRY, Duluth: I rather think this paper might be better named, judging from the doctor's discussion, "The Prevention of Adhesions," rather than "The Surgical Importance of Abdominal Adhesions."

I think practically every man today who attempts to do abdominal surgery or claims to be an abdominal surgeon, tries to prevent abdominal adhesions. I also believe that any one who has done and is doing considerable abdominal surgery does not take much stock in, or possibly none at all, operating for abdominal adhesions unless they are causing absolute symptoms of real grief. These patients who come to us have usually been operated on before and have tenderness over the scar and complain of considerable intestinal disturbance, constipation, and so on, and my own experience has been that we do not get far by operating for these adhesions. I went through that eight or ten years ago, and in later years I have fought shy of them because the results were very unsatisfactory. Of course, if you have a case of obstruction of the bowels or other similar conditions from adhesions, it is a different proposition. There you are operating for obstruction, and not for adhesions. To operate for abdominal adhesions per se is in my notion entirely wrong.

DR. BAGLEY (closing): I have not much more to add to what I have already said in the paper.

With regard to Dr. Williams' point of what was stated by Dr. Charles Mayo in Chicago, we are choosing the lesser of two possible evils when we select the omentum, sigmoid or cecum in covering up tissue, thus preventing primarily the attachment of the small intestines which give us our greatest grief in the abdominal adhesions that form. Adhesions from the omentum, from the pelvic organs, especially preventing the escape of ovarian content, unquestionably predispose to future trouble from these ovaries and always make painful menstrual periods.

In regard to the point made by Dr. Coventry, I think we are inclined to condemn many patients as nervous, neurasthenics, who really have an abdominal condition not always due to adhesions, but because they are nervous we place them in the general category of operative fiends who want something done and are always complaining. We should look more and more upon nervousness or neurasthenia as a symptom rather than an actual pathological condition, and be sure, after studying our patient carefully, that we have not misjudged her and give her the benefit of a doubt by operating if in our judgment she is entitled to one, and if a man has had a reasonable amount of experience and has studied his individual case he will not very often miss the mark.

I have in mind a man of Jewish extraction who had gone the limit. He had been to Rochester. He was unquestionably very nervous, and still his symptoms were of a digestive nature. He did not have a well defined localized pain; it was very general as it so frequently is in some of these cases; he had a little pain everywhere, and still the symptoms were those of digestive disturbance. I was in doubt whether it was due to his knowledge of the matter, but he did have more pain over his appendix than anywhere else. This particular case was not one of adhesion; it was a case of chronic appendicitis and the removal of the appendix relieved the man of all symptoms.

To reiterate: Knowing your patient and making due allowance for nervous stability, I think a conscientious man can go into the abdomen for symptoms which are of a localized nature and are persistent.

THE RELATIONSHIP BETWEEN TONSILLAR INFECTION AND RECURRENT VOMITING.*

ROOD TAYLOR, M. D.,
Section of Pediatrics, Mayo Clinic,
Rochester, Minn.

The striking features of typical attacks of recurrent vomiting, their periodicity, the prostration and intoxication accompanying them, no less than the prompt cessation of symptoms and the rapid recovery of the patient have, for twenty years, received much attention from the clinic and the laboratory.

Griffith, in 1900, reported the presence of acetone in the urine of one patient during the attack. This finding was confirmed the next year by Valagussa. Marfan then wrote describing the symptoms of the disease, and its constant association with acetonuria; but considered that the acetone was merely the companion of other toxic and more truly pathogenic substances as yet unknown. Marfan further pointed out that in recurrent vomiting the ace-

*Presented before the Southern Minnesota Medical Association June 25, 1918, Winona, Minn.

PATIENTS OPERATED ON

Number	Age	Age at Onset	Abdominal Pain	Duration days	Frequency	Foci *	Tonsils and Adenoids previously removed	Tonsils and Adenoids removed	Results
196245	7	Early	0	2-3	15 a yr.	Tonsils 3; adenoids 2	0	+	No answer.
197311	5	Early	0	3-4	3-4 a yr.	Tonsils 3; adenoids 3	0	+	No attacks in year following operation.
200248	7	6	0	1-2	6-10 a yr.	Tonsils 2; adenoids 1	0	+	No answer.
200492	4	2	0	4-5	3 a yr.	Tonsils 3; adenoids 2	0	+	No attacks in 11 mos. following operation.
201571	8	2	+	2-4	5-6 a yr.	Tonsils 3; adenoids 2	0	+	Two attacks lasting 1 day in 10 mos. since operation.
128926	4		0	2	12-15 a yr.	Tonsils 3; adenoids 3	+	+	Much improved in the first year after operation.
138053	5		+	1	12 a yr.	Tonsils 2; adenoids 1		+	Two attacks in 3 yrs. since operation. Attacks accompanied by abdominal pain.
140275	10	5		3-5	4 a yr.	Tonsils 3; adenoids 2		+	No attacks in 3 yrs. since operation.
168613	13	4	0	2	3 a yr.	Tonsils 3; adenoids	0	+	No answer.
170853	4	2	+	1-2	4 a yr.	Tonsils 2; adenoids 2	0	+	Continues to have 4 or 5 attacks a yr.
174799	6	3	0	3 or more	Many	Tonsils 3; dental caries	0	+	No attacks in 18 mos. since operation.
175216	5				2-3 a yr.	Tonsils 2; adenoids 1	0	+	No attacks in 18 mos. since operation.
176002	9	2	0	3-5	4-6 a yr.	Tonsils 3; adenoids 2	0	+	No attacks in 19 mos. since operation.
115185	9	6	0	1-5	8-10 a yr.	Tonsils 4; adenoids 3	0	+	No severe attacks in 4 yrs. after operation.
119817	7	2	0	2-3	12 a yr.	Tonsils 3; adenoids 3 Mother has lues	0	+	No Attacks in 15 mos. following operation.
206609	9	2	0	1	Every wk.	Tonsils 2; organic heart	0	+	3 attacks in 10 mos. following operation.
205075	3		0	2	15-20 a yr.	Tonsils 3; enlarged glands adenoids; pyelocystitis	0	+	No answer
205685	2½		0	1	3-4 a yr.	Tonsils 3 with glands	0	+	No attacks in 10 mos. since operation.
176074	5	16 mos.	0	5-6	4 a yr	Tonsils 3	0	+	No answer.
201575	7		0	4-5	6 a yr.	Tonsils 2; adenoids 2	0	+	No answer.
219441	6	3	0	2-14	Many	Septic tonsils with adenoids	0	+	No attacks in 5 mos. since operation.
64611	5	3	0	1-3	4-20 a yr.	Large tonsils and adenoids. F. has lues	0	+	No attacks in 6 yrs. since operation.
212776	8		0	7	3-4 a yr.	Large septic tonsils and adenoids	0	+	No attacks in 7 mos. since operation.
190162	7	5		2-7	4-5 a yr.	Tonsils 2; pyuria	0	+	No attacks in 1½ yrs. since operation.

PATIENTS NOT OPERATED ON

Number	Age	Age at Onset	Abdominal Pain	Duration days	Frequency	Foci of infection *	Tonsils and adenoids previously removed
158678	6	4		2-3	Many	Tonsils 2; remaining adenoids 1	+
188574	11	Early	+	1-2	10-12 a yr.	Tonsils 2; adenoids 1	0 Appendix removed at 9 yrs.
188876	11	9	+		Many	Tonsils 3; adenoids 1	0
140053	7	3	+	2-3	30-40 a yr.	Tonsils 4; adenoids 3	0
168759	7	3	0	2-5	4-6 a yr.	Tonsils 3; adenoids 2	0
169437	9	7	0	1-2	12-15 a yr.	Tonsil stumps 2; dental caries and adenoids	At 5 years
205876	12				Occasional	Tonsils 2; adenoids 1. Chronic otitis media	0
103245	9	5	0	1-2	4 a yr.	Hereditary lues	+ No improvement.
207117	12	1	0	3-4 wks.	6-8 a yr.	Hereditary lues	Appendectomy; Cholecystostomy; no relief.
204142	16	6	+	3-4 da.	4-8 a yr.	Hereditary lues. Non-septic tonsils	
94461	3	2		3-4 da.	4 a yr.	Mother has lues	
214110	4		0		Occasional	Large tonsils with adenoids	0
204976	6	5	0	1	Occasional	Tonsils 1; adenoids 1	0
206235	9	Infancy	0	3-5 da.	Every 3-4 wks.	Tonsils 3; adenoids 1; mild chorea	0
210779	3	2	0	Several days	Every few wks.	Tonsils small, slightly septic Colds and sore throat	0
211999	8		0	Few days	Occasional	Small non-septic tonsils and adenoids	0
179002	12	10	0	1 day	1 a wk.	Tonsils 2; adenoids 2	Appendectomy 1 yr. ago. No benefit
204896	11	6	0	2-7 da.	Frequent	No tonsils and adenoids	+ No improvement.
66819	4	3	0	7-14 da.	6 a yr.	Large tonsils. Operative adenoids	0
72682	6	2	+	2-4 da.	4 a yr.	Medium sized tonsils and adenoids Pus and casts in urine	
75439	9	5	0	1	Every 2-3 wk.	Medium sized tonsils, large adenoids	0
82204	9	Infancy	0	1-3	Every 2-3 wk.	Repeated tonsillitis.	0
100302	5	5 mo.	0	2-6 da.	Every 2-3 mo.	Tonsils 2; adenoids 2.	0

*Tonsils and adenoids are arbitrarily graded as to the degree of hypertrophy on a scale of 1, 2, 3, and 4. Tonsils 2, Adenoids 1 represent the findings in the usual child's pharynx. This grading does not measure accurately the pathology present.

tonuria was not due to starvation, as in some instances it was present before the patient had refused food. Howland and Richards concluded that while the presence of acetone bodies could not be considered as owing to carbohydrate starvation, they might well be depended on insufficient combustion of ingested carbohydrates. They formulated the theory that insufficient oxidation processes were in part responsible for the symptoms, and supported this by the finding in the urine during the attack, of increased amounts of partially oxidized substances, neutral sulphur, lactic acid, and uric acid. Sedgwick's finding of large amounts of creatin in the urine of children during the attack may also be explained as indirectly due to diminished oxidation.

That the acetone bodies are not in themselves the cause of the symptoms, was finally and conclusively shown by Mellanby who, in 1911, withdrew carbohydrates from a child subject to recurrent vomiting and produced acetonuria, but did not produce vomiting. Nor are the attacks due to dietary indiscretion, to indigestion or to biliousness in the old sense. The majority of opinion of those having the largest experience with the disorder has been voiced by Marfan and by Abt, each of whom states that diet during the interval has no effect on the occurrence of the attack.

It is difficult to conceive that a metabolism which functions perfectly for a period of months will then suddenly become subverted and turn out incompletely oxidized toxic products, without there being present some cause which was not active during the interval. Sedgwick was the first to lay the responsibility for the attacks of vomiting directly at the door of infection when, in 1912, he reported eight cases in all of which the patients were either entirely cured or much improved by the removal of adenoids or tonsils. He also reviewed the literature to that date, finding evidence of infections, sore throat, arthritis, coryza, epistaxis, etc., in the older reports and studies on recurrent vomiting.

My own experience in Dr. Sedgwick's clinic led me to believe that in most of these cases infection of the lymph adenoid tissues in the nasopharynx was an important etiologic factor, and, after beginning work in the Mayo Clinic, I continued to view these cases as possible results of tonsillar or adenoid infection.

Because of the criticisms aimed at wholesale slaughter of tonsils and adenoids, and in order to satisfy myself of the validity of considering the presence of recurrent vomiting as an indication for the removal of tonsils and adenoids, I have studied the case records of the 47 patients treated in the Mayo Clinic previous to the close of the year 1917, and in whom a diagnosis of recurrent vomiting of childhood had been made. Many of these were severe cases. In most instances the children had been brought to the clinic, often from long distances, in the hope of obtaining relief from the attacks. On the whole the patients would seem to be representative of the typical form of the disease. Their average age on coming to the clinic was about 7 years; the average age at onset was about 3 years. The attacks lasted for from one day to two weeks with an average duration of three or four days; their frequency varied from three or four to twenty or more a year. In eight instances the attacks were associated with abdominal pain, usually dull and indefinite. Appendectomy had been performed in three instances, and appendectomy and cholecystostomy in one, without relief of the symptoms. Septic tonsils, or enlarged infected adenoids or both, were present in 40 of the 47 patients, four of the remaining seven had hereditary lues, 2 of these had had their tonsils and adenoids removed elsewhere without benefit, and one improved under specific treatment. One of the patients with hereditary lues had small non-septic tonsils and adenoids, while the record of the fourth contains no mention of the nasopharynx. Of the remaining three patients, two with mild infrequent attacks had small apparently normal tonsils and adenoids, while the third, a brother of one of the two, had had his tonsils and adenoids cleanly removed elsewhere, without benefit. Both this patient and his sister were of the neurotic type, and had had severe eczema in infancy. The removal of tonsils and adenoids was advised in 32 of these patients. The remainder were sent home with tonic perscriptions, advice as to diet, laxatives and general hygiene. The tonsils and adenoids were removed in twenty-four instances. The basis for this paper is found in the results of operation in these cases, as developed by the

replies to the following questionaire mailed to the parents of each patient:

1. Has your child continued to have attacks of vomiting since the tonsils and adenoids were removed here?

2. How many vomiting attacks has your child had since the tonsils and adenoids were removed?

3. Have they been as severe as before the operation?

4. How long do the attacks last at present?

5. Are the vomiting attacks accompanied by severe abdominal pain?

No reply was received in six instances. The parents of one child who, at operation two years previously, was four years old and having annually about four attacks of from one to two days duration, report that he now has about five attacks annually, each about three or four days long and not accompanied by abdominal pain. Of the remaining seventeen patients, one who was having five or six, two to four day attacks each year, reports two attacks of one day each, in the ten months since the operation. One, one year after operation, simply reports that the child is much improved. Another who was having monthly attacks has had only three short ones, with an average duration of fifteen hours, in the three years since operation. These attacks have been accompanied by abdominal pain. One patient reports a few severe attacks shortly after the operation, with two attacks, each lasting only a half day in the last year. This patient was operated on four years previously at the age of 9 years, when she was having about ten, one to five day attacks each year. One more patient, a 9 year old boy who, one year ago, was having more than two attacks a month, has had three in the ten months since operation, and these have been mild and have lasted less than one day. The remaining twelve patients report that they have had no further attacks.

To summarize the evidence obtained from these records of 47 cases of recurrent vomiting, we find that in 40 there was evidence of tonsillar or adenoid disease. In 6 of the 24 patients whose tonsils and adenoids were removed, no further information could be secured. One of the remaining 18 patients is unimproved. Five are very much improved, and 12 have had no attacks since operation, this period varying from seven months to six years.

REFERENCES.

1. Abt, I. A.: Discussion of Dr. C. G. Kerley's article, "One hundred and forty-one cases of recurring vomiting in private practice. Am. Jour. Obst., 1914, lxx, 848.
2. Griffith, J. P. C.: Recurrent vomiting in children (cylic vomiting). Am. Jour. Med. Sc., 1900, cxx, 553-567.
3. Howland, J. and Richards, A. N.: Some possible etiological factors in the recurrent vomiting of children. Arch. Pediat., 1907, xxiv, 401-413.
4. Marfan, A. B.: Les Vomissements avec acétonémie. Arch. de méd. d. enfants, 1901, iv, 641-658.
5. Mellanby, E.: A short chemical study of a case of cyclic vomiting, with some remarks on creatinuria and acidosis. Lancet, 1911, ii, 8-12.
6. Sedwick, J. P.: Studies of recurrent or periodical vomiting. Am. Jour. Dis. Child., 1912, iii, 209-215.
7. Valagussa, F.: Contributo allo studio dei vomiti, ciclici nei bambini. Arch. de méd. d. enfants, 1901, iv, 681-682.

DISCUSSION.

DR. E. J. HUENEKENS, Minneapolis: I think Dr. Taylor is to be congratulated on showing so clearly the relationship between recurrent vomiting and foci of infection. But there is one point that ought to be emphasized: there is another element in these cases besides the focus of infection. Practically all of these children are neurotics. We rarely or never see these cases in dispensary practice. They are all in the so-called leisure class. I imagine the cases where we do not get results from the removal of the tonsils are the cases in which the neurotic element predominated. After the tonsils and adenoids have been removed treatment does not end. We must treat the neurotic part. We must remove these patients from their former environment, from their neurotic parents, and see that they get normal play and are removed from abnormal atmospheres. We should see that they play simple childish games with other children, games suited to their age. We should remove them from their precocious surroundings.

There is another element to be borne in mind, and that is, these neurotic children with severe symptoms respond to slight defects. One of the things that I have noticed especially with all neurotic children after the removal of the tonsils and adenoids is that there still remain behind marked deformities of the jaw, malocclusions, which are only remedied by orthodontia. The more I see of these cases, the more I have become convinced that there is a big field open to us by orthodontia. It is something we have to develop more than we have in

the past. For the past year I have been associated with an orthodontist in Minneapolis (Dr. Hyde) and have seen many of these cases in neurotic children who did not respond to any other treatment, where no other organic lesion could be found, and these children were materially benefited in their nervous symptoms by having their jaws taken care of by proper orthodontic treatment.

DR. F. W. SCHLUTZ, Minneapolis: I fully endorse what Dr. Taylor has said in regard to the removal of tonsils and adenoids in connection with recurrent vomiting, but I do feel from my experience that the removal of the tonsils and adenoids is not the only factor in these cases. There is a neurotic element which has been referred to by the previous speaker. These attacks occur almost always in individuals of the neurotic type, and I have never seen a case yet where the removal of the tonsils or adenoids alone would give relief of symptoms. I am firmly of the opinion that we must resort to a composite measure, such as strict attention to diet, bearing in mind the possibility of the anaphylactic manifestations to which I called attention in my paper; and removal of the patient to a different environment.

Another experience I have had occasionally is quite interesting, and that is the possibility in these cases of some trouble with the appendix. I have had several cases that have had severe attacks of vomiting extending over a period of years. Some of these patients finally came to operation for trouble in the appendix. I cannot but feel that we must not overlook the connection between a tonsillar infection and appendix trouble, a point brought out by Dr. Rosenow of Rochester.

There is no doubt in my mind that anaphylactic phenomena are a big factor in these cases.

DR. H. A. BEAUDOUX, St. Paul: Mr Chairman:—I would like to know whether the sinuses were investigated in these cases and whether any of them were found diseased. It has been brought out in the last seven or eight years that such cases are found among patients suffering from chronic sinus infection.

In a paper I presented to this society at Owatonna some four years ago, I reported, among other cases of atypical frontal sinusitis, that of a woman forty-five years of age who had been troubled with recurrent nausea and vomiting for twenty years, and after operating and curing a chronic frontal sinusitis, the patient has not suffered from vomiting or nausea.

Another point to which I desire to call your attention is that unless many of the common causes for persistent vomiting are eliminated, the claims made by the esayist for the cause of the vomiting of his patients should, in my opinion, be questionable, for the eye, the ear, the abdominal cavity, including all stomach epigastric and intestinal disturbances, particularly in children, should not be overlooked and attributed to so common an occurence as enlarged tonsils. There are, however, individuals who have a very sensitive pharnyx where the presence of large tonsils and elongated uvulae or diseased adenoids can be responsible for such symptoms.

Our late Governor Johnson's physicians at one time were much puzzled concerning the origin of a prolonged nausea and recurrent vomiting which had existed for some days without any clinical evidence of recurrence of his old appendiceal trouble. I advised removal of his much elongated uvula and his relief was immediate. The condition of the nervous symptoms in these cases has undoubtedly some relation to this reflex condition and may be considered in a way responsible for the reflex act.

Onodi, who several years ago made an extensive study of sinus disease in children, confirmed the clinical experience of many others specializing in this line of work concerning the possibility of sinus disease as a causative factor for recurrent and persistent vomiting. Before we can absolutely blame the tonsil, either as a local irritating agent or from its toxic relation to the general circulation as a whole, we must investigate and diagnose the more common causes of recurrent and persistent vomiting, lest we overlook some lesion of more importance and danger to the patient for the time being than an enlarged pair of tonsils.

DR. C. A. LESTER, Winona: There are several points to be considered in connection with these cases of recurrent vomiting. It has been clearly shown that there is no one thing that causes it. It is like headache and other neurotic symptoms. A man may have headache from flat feet. All of these symptoms do not come from the tonsils. You may remove the tonsils and yet the source of the trouble has not been removed. Again, all of the symptoms from which these patients suffer do not come from the sinuses, from the chemistry of the intestine, or do not come from appendicitis. Some of these cases are due to causes that have not been mentioned. The most remarkable instance of this kind I have had I will relate briefly, although I have had a few similar cases. The patient was a boy, 12 years of age, who had recurrent vomiting. I do not recall his exact history, but learned that he had had recurrent vomiting ever since he was a small boy. At first, he had recurrent vomiting several times in a year, and then the attacks gradually became more frequent and worse until finally when I saw him he was vomiting daily. Two years previous to the time I saw him it was thought by the consultant in the case that he had appendicitis, but they did not operate. At the time he was brought to me his case was considered one of appendicitis. He was vomiting daily. A surgeon who examined the boy said he did not have appendicitis and suggested that he come to see me to have his eyes examined. He had already lenses applied to his eyes without doing any good. He still continued to vomit. The first thing I looked for (and I have had a number such cases) was up and down deviation of the eyes. If you will take trial prisms and put a three degree prism base up before one eye, or a 3° prism base down, you will not have

it on long before the patient vomits. This boy had 21° of latent hyperphoria, and no wonder he vomited. I put on 7° correction at once, 3½° prisms in each eye, in addition to correcting more or less hyperopia, which was enough to cause some eye strain. Instead of the prism making him sick, as it usually does, that boy has not vomited since. This is the most remarkable case I have seen or heard of. In six months the latent hyperphoria had gone down to 15°; a year and a half later it had gone down to 8°. I reduced the prisms to 5°, and he is still wearing a 5° prism and is perfectly healthy.

This brings up another cause for recurrent vomiting, and in this connection I have observed another thing to which I desire to call attention, although this is not a paper on the eye. I refer to muscle deviation. Recurrent vomiting is a symptom in my experience which accompanies **vertical** deviation of the eye, and there is a lack of concentrative power which accompanies marked **external** deviation. I have the opportunity to examine a good many students, and on asking every one of them this question: "Have you noticed that your concentrative ability in the last year or two in studying a few paragraphs is not as great as it formerly was?" If they have answered yes, they found they would have to read a paragraph four or five times in order to understand it, and that their power of concentration was not as great as formerly, such students always have exophoria. I want to bring this out because I considered it a point of great importance.

DR. W. A. JONES, Minneapolis: It is gratifying to attend a medical meeting and see so many men interested in neurological subjects, and notwithstanding what has been said with reference to the tonsils and adenoids as foci of infection, I am convinced that there are cases reported and many unreported that are due to defects primarily in the nervous system rather than to enlarged tonsils. The reason I think Dr. Taylor did not relieve some of these cases of reflex vomiting by the removal of the tonsils and adenoids is because the primal factors did not receive proper attention or he did not get to the fundamental facts. If the families of these patients were either treated or exterminated we would get away from this trouble (Laughter), but having come into the world poorly constructed and with a bad system of some sort it is no wonder that these patients have developed other defects that interfere with the proper working of the various glands of the body.

I have seen a great many cases of reflex vomiting, and I have seen none that have been benefited, except in one or two instances, by surgical intervention or something of that sort. It seems to me, if we follow the history of these people and study the symptoms of which they complain, we will find that they are not subjected to the treatment that they are really entitled to. One important factor in treating these patients is the correction of bad nervous habits. Their tonsils may be removed or adenoids cleared away, and yet the original defect remains. I am not decrying the removal of the tonsils and adenoids, because I believe it is one of the most popular indoor sports we have. (Laughter.) We ought to think more seriously of the investigation of historical facts, time and patience, and not think of the visible signs as the only evidence of disease, defect or disorder. If we do, much needless detail work is done without serviceable results.

DR. W. D. SHELDON, Rochester: I wish to mention a point that has seemed of importance to me after what Dr. Jones has said. It fits in with the facts of an enormous group of people whom we see with migraine. I do not know what migraine is except that it is hereditary. It is met with all through life up to the age of forty-five. There is a history of periodic vomiting with headache, and oftentimes it begins, so far as the history goes, back to the time that these people can remember. I have wondered what percentage of these cases develop into a migraine picture when they become adults. I have not yet heard or read of an answer. These migraine cases are very numerous. They begin early in life with what we call biliousness, with periodic vomiting, and they cannot remember when the trouble began. It is an hereditary disease and should be treated in the manner spoken of by Dr. Jones.

DR. TAYLOR (closing): I feel that my paper has elicited a very good and interesting discussion. As regards recurrent vomiting as a distinct disease, I do not think it is anything more than a group of symptoms, and I am sure in different patients it is due to a different cause or causes. Dr. Schlutz and Dr. Sheldon think that in a great many cases, not in all, there is a distinct nervous defect as a basis. One sees patients in whom the nervous element is so clear and so definite that it surely outbalances any other factor in producing it. I have seen such cases. I am very cautious not to advise surgical interference in such cases unless the hymptoms are such as to warrant it.

With reference to the appendix, we see a great many children coming to our offices with indefinite abdominal pain, without a localizing pain, without localizing tenderness, without tenderness following pain, and so on. This pain, which may be felt anywhere in the abdomen in some of these cases, leads us to believe that it is not due to the appendix. This type of abdominal pain is frequent in cases with recurrent vomiting.

The question regarding infection of the accessory nasal sinuses was raised. These children all received the routine ear, nose and throat examination, and in none of them was there any mention of disease of the accessory sinuses, although at the time the children were examined the sinuses were being searched and examined repeatedly. I may be in error, but I believe that the antrum until the age of eight years does not figure as a source of constant focal infection. The ethmoid cells figure earlier, and it may be they are responsible.

Minnesota Medicine

OWNED BY THE MINNESOTA STATE MEDICAL ASSOCIATION

PUBLISHED BY ITS EDITING AND PUBLISHING COMMITTEE

R. E. Farr, M. D. Minneapolis. — H. Longstreet Taylor, M. D. St. Paul.
L. B. Wilson, M. D. Rochester. — J. E. Hynes, M. D. Minneapolis.
J. T. Christison, M. D., St. Paul.

EDITOR

Ernest T. F. Richards, M. D., St. Paul.

ASSISTANT EDITORS

E. M. Hammes, M. D. St. Paul. — P. D. Berrisford, M. D. St. Paul.

ASSOCIATE EDITORS

First District: Geo. S. Wattam, M. D., Warren.
Second District: A. W. Ide, M. D., Brainerd.
Third District: E. L. Tuohy, M. D., Duluth.
Fourth District: F. L. Adair, M. D., Minneapolis.
Fifth District: Geo. B. Weiser, M. D., New Ulm.
Sixth District: A. E. Spalding, M. D., Luverne.
Seventh District: H. B. Aitkins, M. D. Le Sueur Center.
Eighth District: A. F. Schmitt, M. D., Mankato.

BUSINESS MANAGER

J. R. Bruce

EDITORIAL AND BUSINESS OFFICES

LOWRY BUILDING : : : : SAINT PAUL, MINNESOTA

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal itself, not to individuals.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance. Single Copies 25c Foreign Countries $3.00 per annum.

Vol. II February, 1919 No. 2

EDITORIAL

MINNESOTA MEDICINE'S FIRST YEAR

Statement by the Editing and Publishing Committee.

Minnesota Medicine completed the first year of its publication with the December issue. With all expenses paid and a balance of $400.00 remaining to the credit of the State Medical Association, *Minnesota Medicine* enters upon the second year with every confidence in the future.

The Editing and Publishing Committee feels that it is most gratifying to have even a small balance on the profit side of the ledger as the result of the first year's operations, especially as during this time the world was plunged in its greatest war, with all of the attendant disorganization of entire social systems.

These results are largely due to the co-operative support and assistance of the members of the State Medical Association, for which grateful acknowledgement is hereby made.

Too much praise cannot be given to our talented and hard working editor, Dr. E. T. F. Richards, to whose labors in behalf of *Minnesota Medicine* the Editing and Publishing Committee desires to pay special tribute.

The Journal of the American Medical Association during the past summer indorsed editorially the action of the Minnesota State Medical Association in joining the large majority of the states by publishing its own organ, and complimented the Association on the high standard which *Minnesota Medicine* had constantly maintained.

Since the publication of its own organ is working out so satisfactorily, the Editing and Publishing Committee point with much satisfaction to the confidence with which the House of Delegates entered upon this venture. There was not a dissenting voice in 1916, when the Committee was appointed to investigate and report upon the advisability of the publication of a journal, and the acceptance of the report of that Committee in 1917 was also unanimous, as was the vote upon the commendatory resolution of the 1918 House of Delegates upon the success of the Editing and publishing Committee in the conduct of the Journal.

The Editing and Publishing Committee regretted its great loss in being deprived of the invaluable council and assistance of Dr. E. W. Buckley whose term has expired. Dr. Buckley accepted the appointment on the Editing and Publishing Committee only on condition that he be given the one year term of office, and with the stipulation that he would not accept a reappointment. In the selection of Dr. J. T. Christison, who succeeds Dr. Buckley, the President has made a wise choice, as Dr. Christison brings to the position the record of much conscientious work done for the State Association and other medical organizations.

NEUROCIRCULATORY ASTHENIA

Neurocirculatory asthenia has been one of the greatest problems which the examiner of military recruits has had to meet. Although with the war over, the problem is perhaps slightly less pressing, yet the condition is one seen in civilian life daily and as such war-

rants our closest attention. One of the articles presented in this issue bears directly on the question, and recently, Major Friedlander and Captain Freyhof (Arch. of Int. Med., Vol. 22, No. 6) have presented an intensive study of fifty such cases, analyzed after the method of T. Lewis. In this group pain was the most frequent symptom complained of. The location of the pain was usually in the precordial region; at times in a well defined area, but again seemed to be a hyperalgesia of the chest wall. Dyspnea on exertion, paroxysmal palpitation, giddiness, nervousness, weakness, sweating and flushing were next in order of frequency of occurrence. *No one symptom predominated.* Precordial distress including dyspnea, pain and palpitation, nervousness, weakness and giddiness characterize the syndrome.

The general physical status of the group showed vasomotor instability as evidenced by alternating flushing, pallor, cold, cyanotic, clammy extremities, and marked evidence of dermatographia. Fifty-two per cent were robust and well developed, while forty per cent were rather slender, flat-chested and showed poor muscular tone.

The cardiac status showed no one in Friedlander and Freyhof's group presenting evidence of structural cardiac change. The relative cardiac dullness was constantly within normal limits. Twenty-two per cent had functional apical murmurs, while 28 per cent had accidental pulmonic systolic murmurs. Two men showed impure first apical sounds, while two had a reduplication of the first sound. The response to exercise was fair in 40 per cent, good in 50 per cent, and poor in 10 per cent. The exercise test was "one hundred hops on the left foot." Ten per cent of the men had an apical systolic thrill palpable after exercise or excitement. A respiratory arrhythmia, more marked in some than in others, was present in all cases.

Of the fifty men in the group the tonsils were the worst offenders as portals of entry for infection, 90 per cent having chronic suppurative tonsillitis. Thirty-four per cent gave positive findings of oral infection. Following extraction and after cleaning up the mouth infection, a definite, marked improvement was observed, not only in general conditions but a specific beneficial result was noted in the heart rate and character of the response to exercise. This is in accord with the view that systemic irritation results more frequently from nonencapsulated granulomas on the apices of teeth than from definitely encapsulated blind abscesses.

Such are the common clinical manifestations of this frequent syndrome. The treatment of it is not by any means difficult and, as the army has well demonstrated, the results of treatment are most encouraging. Essentially the management of neuro-circulatory asthenics consists, first, in the thorough eradication of all existing foci of infection and, secondly, of a systematic series of carefully graduated exercises.

A recent article by Captain Bertnard Smith (Jour. A.M.A., Vol. 72, No. 2), gives in detail the type of exercises employed, showing the gradually progressive character of them from the simple exercises of the extremities up to the more vigorous exercises involving the use of trunk muscles. This writer points out that the main problem in these cases is to improve the general physical condition of the patients, and but little progress can be made in this direction until they begin to get some self-confidence, and realize that even if they do get tired, short of breath or have some pain in the chest, nothing serious is going to occur. This type of individual must be gradually taught that it is safe for him to venture beyond what he has previously considered the limit of his physical activity. With this in view, the exercises of the first and second grades are given in slow rhythm, and care is taken to avoid short, snappy commands.

Neurocirculatory asthenia is a condition which has been sadly neglected, the attitude of the profession largely being that, as the underlying status is congenital, efforts to overcome it were hardly worth while. Needless to say, such an attitude is wrong. The army has proved that a very great deal can be done for these unfortunates.

The army's successful method in meeting this problem should be at once adopted by all civilian practitioners to raise this large group of individuals, both men and women, hitherto wrongly labeled "cardiacs," to the plane of successful self supporting happy citizens.

NEWS FROM ABROAD

We are indebted to Dr. R. E. Farr of Minneapolis, for permission to publish the following letter from Capt. Stanley R. Maxeiner, which we feel sure will be of great interest to all our readers:

November 15, 1918.

Dear Doctor Farr:

I thought you would be interested to know how I spent the leave which I have had in "Blighty." After 16 months of active service, (15 of which have been abroad and 10 of these in the line), you may guess I was glad to get this my first furlough and that I had enough things scheduled, that would take me much more than my 14 days to do. I had decided that I must seize every opportunity to see all that was possible in the line of clinics, as well as the things interesting to the average traveler. With that in mind, I armed myself with letters of introduction from my British colleagues to prominent Surgeons in London, Aberdeen, Glasgow and Edinburgh.

I left Calais on Oct. 24th and arrived in London via Dover on the same day. I spent five days in London, during which time I saw such well-known places as The Tower, London Bridge, St. Bartholomew's Church, which my ancestors attended and where some of them lie buried; also St. Paul's Cathedral and many other interesting places. I saw several good theatres which we have no opportunity of doing here. One of the plays was at Drury Lane, the theatre made famous by Shakespeare. Needless to say, I enjoyed all of these things, but I must tell you more of my visits to clinics.

I first visited Guys Hospital in London where I saw Lt. Col. Fagge, a man trained by Lane and to whom I am particularly grateful for assistance in arranging clinics. I was particularly interested to note that he used no antiseptic on the base of the appendix, which he ligated with silk and did not invert. In most cases he closed the wound with silk and silkworm gut sutures, which I later found to be common porcedures in England and Scotland.

He did, under local, a suprapubic cystostomy preliminary to prostatectomy, in a man of 70 years with a very high blood urea content. His anesthesia was not ideal.

Two of the most enjoyable afternoons I had were spent with Sir Arbuthnot Lane, also at Guys. ' He is a grand man, charming to meet, and a "master" as I heard him spoken of at the hospital. I saw him do one laparotomy for the reparation of troublesome adhesions following a colectomy. The first operation had been done for toxaemia due to stasis in the large bowel. The patient had improved a great deal and had gained in weight. Adhesions were separated and abraded surfaces peritonized in so far as possible. The sites of his anastomosis and excision were remarkably good. As in the case of others he had not solved the problem of preventing the reforming of adhesions. The second case he did was for obscure gastric or duodenal symptoms and which at operation he stated were due to ascending infection due to stasis, the result of congenital malformations persisting in the form of restricting membranes and veils. These hampered the freedom of the sigmoid, caecum and pylorus. The latter was bound closely to the gall bladder and under surface of the liver. These bands and veils were carefully divided without denuding of peritoneum and greatly increased the mobility of each part. He prognosed great improvement.

We all associate Sir Arbuthnot with the Lane Plate and Lane Technique of using the same. I had the great pleasure of seeing him plate a fracture of the middle third of the humerus and fractures of the middle thirds of Radius and Ulna. Both cases were three days after injury and there had apparently been little effort at reduction before operation. The reduction in each case was anatomically perfect and accomplished with the least possible tissue trauma. His technique was supberb and one can quite easily see how he can bury plates and not have to remove them later. Never during either operation did he or his assistants touch with their fingers any tissues or any part of any instrument that came in contact with the wound.

I next visited Aberdeen, Scotland, one of the most beautiful cities I have ever seen. It is built entirely of gray granite and from the looks of things should endure for ages, even the weather of Scotland. Marischal University and Kings College are beautiful examples of the very new and the very old architecture to be found in the British Isles. I spent one day in Glasgow where I saw the River Clyde and its famous ship-building yards. There are numbers of grand public buildings here, such as the Art Museum and the University, with one of the finest halls I have ever seen in which is a magnificent organ, the gift of Carnegie. I was unfortunate in my arrangement of clinics in Aberdeen and Glasgow.

In Edinburgh I again visited the hospitals. At the Royal Infirmary I saw Dr. Miles, a very deft and skilled Surgeon, do a suture of a severed peroneal nerve following a bullet wound. He worked without gloves and used non-absorbable sutures throughout. No attempt was made to wrap the point of suture.

I next visited Prof. Alexis Thompson. He performed an excision of the rectum for carcinoma, 2½ weeks after a permanent preliminary colostomy. He did not remove the entire segment distal to his colostomy but, after removal of the diseased portion, anchored the lower end of the remaining bowel to form a permanent fistula. He was compelled to sacrifice a part of the posterior wall of the vagina and only partially closed the wound. He reported that since he made a permanent artificial anus and did not attempt to save the sphincter his percentage of recurrences in rectal cancer had been greatly reduced.

I was particularly interested in a herniotomy that he did in which he put no sutures between Int. Oblique and Poupart's ligament. He stated that because the sac was congenital the internal oblique required no suture in ordinary cases. He, of course, excepts hernia with very large internal rings. He closed the wound anatomically. In femoral hernia he said that he op-

ened the abdomen to remove the sac and made no attempt to close the femoral opening.

After his clinic he entertained a Doctor from New Zealand, one from Texas and myself at luncheon at the University Club.

It was in Edinburg that I met Dr. Mounahan of International Falls, the only acquaintance I have met since I left New York.

On my return to London I went to see Mr. Jas. Berry at the Royal Free Hospital. In his first case, an appendectomy, he also paid little attention to the stump of the appendix. His second case was an intestinal fistula following the drainage of an abscess. He was most conservative and closed the hole in the bowel without exploring the abdomen. From clinical evidence he concluded that there was no distal obstruction.

In his third case he removed the stitches following an operation for cleft palate. In this case he had followed his usual custom of closing the lip first (before 2 months). It had been a very bad case of double hare-lip and cleft palate with protruding premaxilla. The facial contour had been excellently restored and the lip was a very good one, although he was not proud of it.

In the present case he had attempted to close the palate completely at 8 months. The soft palate and posterior part of the hard palate had united perfectly, but the anterior part of the hard palate had not joined. He said he did not mind this, as often in bad cases he closed the posterior part first. The remaining fistula tends to grow smaller and at the age of 1½ to 3 years is quite small and closes with ease.

Mrs. Berry, who is a very able and charming woman, and who is also a physician, gave all of Mr. Berry's anesthetics. In the evening I was entertained at dinner at their home. They both had very pleasant recollections of Minneapolis and Lake Minnetonka, and inquired after their good friend Dr. David Owen Thomas.

My last visit to clinics was to see Sir John Bland-Sutton at the Middlesex Hospital. The visitor is much more impressed by the speed and dexterity of this Surgeon than by his technique. The first case was an amputation of the breast for carcinoma. A section of the growth had been removed two days previously and was reported by the pathologist to be malignant. He removed the breast without removing either pectoral muscle. The fat and glands of the axilla and the breast were removed in one piece, working from breast to axilla. The axillary dissection was not nearly so complete as I have been accustomed to see.

Case two was a partial thyroidectomy for cystadenoma. It was particularly easy after rupture of the cyst. The third case was a hysterectomy for suspected carcinoma. It was done very quickly with the use of but one clamp on each broad ligament.

The fourth and last case was a double salpingectomy and hysterectomy for double pyosalipinx and tubo-ovarian abscesses of gonorrheal origin. In this case, with the patient in the Trendelenberg position and partially eviscerated, the abscesses were opened and both tubes and uterus removed without any attempt to protect the general peritoneal cavity or the eviscerated intestines by means of packs or towels.

After seeing all of these excellent clinics and having a very good time, I returned to France via Calais on November 7th, just in time to help celebrate the signing of the Armistice.

Since my return our unit has moved forward to Tourcoing, a city of about 80,000 inhabitants, which was recently evacuated by the Germans. We are in a large school building called the "Lyceum National," which was used as a hospital by the Germans for 4 years. We have about 450 patients, a large number of whom are Influenza and Broncho-pneumonia cases. The mortality among the latter is very high. Since the cessation of hostilities I am having much less X-ray work to do and am spending much more time doing clinical work.

It is a great pleasure to be stationed in so fine a building and to sleep in good quarters again. Tents for hospitals and for billets have decided disadvantages in winter, when fuel is such a problem.

With kindest regards, I remain,

Yours sincerely,
Stanley R. Maxeiner,
Capt. M.C.U.S.A.,
Radiologist, 8 C.C.S., B.E.F.

OBITUARY

DR. EDWARD P. RYAN

Dr. Edward P. Ryan, St. Paul, formerly of Stillwater, died on December 31, 1918.

DR. OTTO L. WINTER

Dr. Otto L. Winter passed away at his home in River Falls, Wis., on January 2d, 1919, of pneumonia following influenza.

DR. THOMAS M. THAYER

Dr. Thomas M. Thayer, surgeon on the Breckenridge division of the Great Northern Railroad died at Herman, Minn., December 22, 1918, at the age of 42 years. He is survived by his widow and one daughter.

DR. CORNELIUS WILLIAMS

Dr. Cornelius Williams, a resident of St. Paul for the past thirty-six years, died at St. Luke's Hospital on December 29, 1918. Dr. Williams was 73 years of age. He is survived by one son, S. W. Willaims, of Boston, Mass.

DR. MITCHELL MIKKELSEN

Dr. Mitchell Mikkelsen, pioneer physician and surgeon of Wells, Minn., passed away at his home on Wednesday, January 8th. His remains were taken to Winnebago and put into a vault where they will remain until his sons, William and Mitchell, both in the service overseas will return, when the interment will be made at the former home, Delavan, in the family burial place.

DR. GEORGE E. PETERSON

Dr. George E. Peterson of Dassel, Minn., passed away at his home on January 5th, following an attack of pneumonia from which he had suffered about ten days. Dr. Peterson was born in Wright County, March 6th, 1878. After graduation he practiced in North Dakota and at Murdock, Minn., and for the past ten years has been associated with his brother, Dr. A. C. Peterson, at Dassel. He is survived by his widow, one sister and four brothers.

LIEUT. EARL W. GILROY

Lieut. Earl W. Gilroy of Minneapolis, died from bronchio-pneumonia on December 30, 1918, a few weeks after he had been honorably discharged from military service. Dr. Gilroy was a graduate of St. Thomas College and entered the University of Minnesota in 1910 at the age of 16. He later entered the University of Chicago and there received his degree of bachelor of science at the age of 20. At 22 he graduated from Rush Medical College, Chicago, and by competitive examination secured an appointment as interne in the Cook County Hospital, Chicago. His first war orders took him to Fort Riley, Kansas, where he received his preliminary training. On July 3, 1918, he was transferred to the base hospital at Camp Wheeler and assigned to the pathological laboratory there. In a few months he was made head of the department, which position he held until discharged on December 3, 1918. He is survived by his mother and by an uncle, Dr. R. E. Farr of Minneapolis. His funeral was held on January 1st, 1919, at Montello, Wis.

OF GENERAL INTEREST

Dr. E. M. Howg, of Rochester, has moved to Slayton, Minn.

Dr. H. H. Hanson, formerly of Hallock, has moved to Kennedy, Minn.

Dr. William Clay Dieterich formerly of Waverly, has moved to Truman, Minn.

Dr. Frederick H. Neher, after seven months service in the army has returned to St. Paul.

Dr. Carlton Graves, Aitken, Minn., has been appointed health officer of Aitkin to succeed Dr. F. E. Murphy.

Dr. F. Metcalf for over eleven years physician at Winton, Minn., has moved to Fulda, where he is to have charge of a hospital.

Dr. G. L. Jacquot of Ivanhoe, Minn., has gone to Chicago where he will take a special course in eye, ear, nose and throat work.

Dr. William Arthur Piper who has been stationed at Fort Riley, Kansas, for several months, has returned to Mountain Lake, Minn.

Dr. C. R. Christianson formerly of Starbuck, recently received an honorable discharge from the army and has now located in Morris, Minn.

Dr. G. J. Tweedy who was commissioned a captain and spent two months at Camp Dodge, has returned to Winona and resumed his practice.

Dr. William H. Daniels, Crookston, has returned home from the United States army base hospital service and has resumed his practice.

Lieut. W. A. Meierding has returned to the base hospital at Fort Riley, Kansas, after spending a week with his family at Springfield, Minn.

Dr. D. C. Jones, St. Paul, officially ended his term as coroner of Ramsey County on January 4th. He has been succeeded by Dr. C. A. Ingerson.

Dr. Henry Lysne, Minneapolis, recently returned home from the officers' Training Camp at Fort Riley, Kansas, where he has been for the past two months.

Dr. Bret V. Bates has nicely recovered from the effects of being gassed in the Argonne Forest and expects to return to Wheaton and resume his former practice within a very short time. Dr. Bates was recently commissioned a Captain.

Dr. W. Wright recently submitted his resignation as assistant superintendent of the City and County Hospital, St. Paul. Dr. D. B. Rice was appointed his successor.

Dr. W. V. Lindsay of Winona is stationed at Evacuation Hospital, No. 17, Vladivostok, Siberia. Dr. Lindsay was promoted to the rank of Major in September, 1918.

Dr. J. P. McDowell former city health officer of St. Cloud, Minn., recently returned home from Fort Oglethorpe, Ga., where he has been stationed for some time.

Dr. Andrew Sivertsen of Minneapolis, who has been stationed at Fort Riley, has been honorably discharged from the service and returned to his practice in Minneapolis.

Dr. J. W. Daniels, St. Peter, Minn., who has been in the army service for the past two years, recently returned from California. He expects to resume his practice in St. Peter.

Dr. W. E. Patterson of Hibbing and formerly of Westbrook, has decided to return to Westbrook and has made arrangements whereby he will take over the work of the late Dr. H. A. Schmidt.

Dr. Bjarne Ravn returned recently from Chattanooga, Tenn., near which city he has been stationed during his period of army service. He expects to resume his practice at Windom, Minn.

Dr. Albert G. Moffatt of Howard Lake, who has been in the government service at Camp Sheridan, Chicago, and who was recently mustered out with the rank of captain, has decided to locate at Litchfield.

Dr. C. W. Slusser formerly of Grangeville, Idaho, and who was recently discharged from the Medical Corps of the U. S. Army, has become associated with Dr. F. A. Allen at the Allen Hospital at Crosby, Minn.

Dr. W. N. Kendrick, who has held a captain's commission, and who has been stationed at Camp Pike near Little Rock, Arkansas, was recently mustered out of the army service and has returned to his home in Spring Valley, Minn.

Dr. Clara Eirley, who for the past five years has been in charge of the women's department of the State Hospital, St. Peter, recently resigned her position and left for Moreland, Indiana, where she expects to spend some months in rest before again engaging in work.

The quarterly meeting of the Red River Valley Medical Society was held in Crookston, on December 26, 1918. The following officers were elected for the ensuing year: President, Dr. F. M. Dryden, Crookston, Minn.; vice-president, Dr. Ed Bratrud, Warren, Minn.; secretary-treasurer, Dr. A. A. Kahala, Crookston, Minn.

At the twenty-eighth annual meeting of the Western Surgical Association held in Chicago recently, the following officers were elected: Dr. Roland Hill, St. Louis, president; Dr. Emil Beck, Chicago, Dr. George N. Kreider, Springfield, Ill., vice-presidents; Dr. Arthur T. Mann. Minneapolis, secretary-treasurer. Dr. Edward Evans, La Crosse, Wis. and Dr. E. S. Judd, Rochester, Minn., were elected to the executive council.

The Pine County Board of Commissioners at its first meeting of the year held in January named county physicians as follows: Dr. W. C. Ehmke, of Willow River, to have Pine Lake, Finlayson, Birch Creek, Sturgeon Lake, Windmere, Norman, Bruno, and Kettle River towns, and Willow River, Sturgeon Lake, Rutledge and Finlayson villages; Dr. B. S. Bohling of Sandstone has Danforth, Arna, Wilma, Fleming and Dosey towns, and Sandstone village; Dr. H. P. Dredge of Sandstone, Dell Grove, Sandstone, Kerrick, Nickerson and Bruno towns, and Sandstone village; Dr. E. L. Stephan of Hinckley to have Brook Park, Mission Creek, Crosby, Hinckley, Barry, Clover and Ogema towns, and Hinckley village; Dr. R. L. Wiseman of Pine City, Rock Creek, Royalton, Pine, Chengwatana and Pokegama towns, and Pine City village.

NEW AND NON-OFFICIAL REMEDIES

During December the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Non-proprietary Articles:
Benzyl Benzoate.
Emetine Bismuth Iodide.

Abbott Laboratories:
Emetine Bismuth Iodide-Abbott.

Hynson, Westcott and Dunning:
Benzyl Benzoate-H. W. and D.
Solution of Benzyl Benzoate, Miscible-H. W. and D.

Merck and Company:
Diethylbarbituric Acid-Merck.
Diethylbarbituric Acid-Merck Tablets, 5 grains.
Sodium Diethylbarbituric Acid-Merck.
Sodium Diethylbarbituric Acid-Merck Tablets, 5 grains.

H. K. Mulford Company:
Bismuth Emetine Iodide-Mulford.
Cachets Bismuth Emetine Iodide-Mulford, 8 grains.

E. R. Squibb and Sons:
Chlorinated Eucalyptol-Squibb.

Takamine Laboratory:
Arsaminol—
Arsaminol 0.1 Gm. tubes.
Arsaminol 0.4 Gm. tubes.
Arsaminol 0.2 Gm. tubes.
Arsaminol 0.5 Gm. tubes.
Arsaminol 0.3 Gm. tubes.
Arsaminol 0.6 Gm. tubes.

NEW AND NON-OFFICIAL REMEDIES

Emetine Bismuth Iodide.—A complex iodide of emetine and bismuth containing from 17 to 23 per cent of emetine and from 15 to 20 per cent of bismuth. It has the action of emetine, but when taken by mouth, it is less likely to cause vomiting than the soluble salts of emetine administered orally. It has been used with apparent good results in the treatment of chronic cases and carriers of amebic dysentery, even where the hypodermic administration of emetine has failed. The commonly used dose has been 0.2 Gm. (3 grains— daily for four days, either in a single dose at the midday meal or in divided doses.

Emetine Bismuth Iodide (Abbott.)—A brand of emetine bismuth iodide complying with the N. N. R. standards. The Abbott Laboratories, Chicago.

Bismuth Emetine Iodide (Mulford).—A brand of emetine bismuth iodide complying with the N. N. R. standards. The H. K. Mulford Co., Philadelphia.

Cachets Bismuth Emetine Iodide—Mulford. 2 grains—Each cachet contains 2 grains of bismuth emetine iodide (Mulford). The H. K. Mulford Co., Philadelphia.

Creosote Carbonate S. and G.—A brand of creosote carbonate, U. S. P. Schering and Glatz, Inc., New York.

Guaiacol Carbonate—S. and G.—A brand of guaiacol carbonate, U. S. P. Schering and Glatz, Inc., New York (Jour. A. M. A., Dec. 14, 1918, P. 1997).

Benzyl Benzoate.—The benzyl alcohol ester of benzoic acid. It lowers the tone of unstriped muscle and has been suggested as a remedy against renal, biliary, uterine and intestinal colic and other spasms of smooth muscle, including angiospasm. Its clinical use is in the experimental stage. The dose is from 0.3 to 0.5 Cc. (5 to 7 minims). Benzyl benzoate is a liquid at room temperature, insoluble in water, but miscible with alcohol, chloroform and ether.

Benzyl Benzoate—H. W. and D.—A brand of benzyl benzoate complying with the tests and standards of N. N. R. Hyson, Westcott and Dunning, Baltimore, Md.

Solution of Benzyl Benzoate, Miscible—H. W. and D.—A solution of benzyl benzoate—H. W. and D. in 78 Gm. ethyl alcohol emulsified with 2 Gm. castile soap. It has the actions and uses of benzyl benzoate. Hynson, Westcott and Dunning, Baltimore, Md.

Diethylbarbituric Acid-Merck.—A brand of barbital complying with the N. N. R. standards. The actions, uses and dosage of barbital (first introduced as veronal) are described in New and Non-Official Remedies. Merck and Co., New York.

Diethylbarbituric Acid-Merck Tablets, 5 Grains.—Each tablet contains 5 grains of diethylbarbituric acid-Merck. Merck and Co., New York.

Sodium Diethylbarbituric Acid-Merck.— A brand of barbital sodium complying with the N. N. R. standards. The actions, uses and dosage of barbital sodium are described in New and Non-Official Remedies. Merck and Co., New York.

Sodium Diethylbarbituric Acid-Merck Tablets. 5 grains.—Each tablet contains 5 grains of sodium diethylbarbituric acid-Merck. Merck and Co., New York (Jour. A. M. A., Dec. 28, 1918, p. 2153).

PROPAGANDA FOR REFORM

Leonard Ear Oil.—This is an alleged cure for deafness, sold by A. O. Leonard, New York City. Formerly it was sold on the mail order plan as an accessory to Leonard's Invisible and Antiseptic Ear Drums. Now "Ear Oil" is sold in drug stores. The Department of Health in the city of New York found it essentially to be liquid petrolatum with camphor, eucalyptol and alcohol emulsified by a soft soap, prosecuted Leonard, and prohibited the sale of the "Ear Oil" in New York City. The sale of the "Ear Oil" has also been prohibited in Cleveland. (Jour. A. M. A., Dec. 7, 1918, p. 1932.)

Emetin Bismuth Iodid.—The Council on Pharmacy and Chemistry reports that because of the apparently good results obtained with it, emetin bismuth iodid has been accepted for New and Non-Official remedies. Emetin bismuth iodid is insoluble in water and dilute acids, but is decomposed by alkalis, and thus should pass the stomach unchanged but exert its action in the intestines. Those who have reported on the use of the drug in amebic dysentery report that the disappearance of ameba from stools was generally complete and apparently permanent even in chronic cases of carriers and in cases where the hypodermic administration of emetin has failed. Purging and vomiting, however, are not entirely avoided. The drug is usually given in a single dose of three grains at the midday meal for twelve days. (Jour. A. M. A., Dec. 14, 1918, p. 2013.)

Fact and Opinion on the Influenza Epidemic.—At the recent meeting of the American Public Health Association the discussions relative to the etiology of the

present epidemic resolved themselves into the belief that the bacillus of influenza is not the primary etiologic factor and that the actual cause is as yet unknown. In the argumentation for and against the face mask as a means of preventing the spreading of the disease, sight was lost of the fact that definite evidence has been presented to show that the wearing of a mask prevents the diffusion of pathogenic organisms of which we have definite knowledge. A paper was presented which indicated to the satisfaction of most listeners that a significant factor in the spread of the epidemic in army camps was the inadequate washing of mess kits. (Jour. A. M. A., Dec. 21, 1918, p. 2074.)

The Goldwater Ordinance.—In 1914 the Department of Health of the City of New York revised the Sanitary Code so as to require that no "patent medicine" should be sold in the City of New York unless the names of the potent ingredients are declared. The ordinance was bitterly fought by the "patent medicine" interests, the fight being led by E. Fougera and Co., E. N. Crittenton Co., and H. Panten and Son. Now the Appelate Court of New York has decided that the ordinance is void, but has upheld the principle that a disclosure of the formula of medicines may be required. The underlying principle of the ordinance was the right on the part of the city to require disclosure of ingredients, and that right the Appelate Court upholds. (Jour. A. M. A., Dec. 21, 1918, p. 2093.)

Influenza Vaccine. —So far but two definite reports of adequately controlled experiments on the use of influenza vaccine appear to have been published. That of Barnes concerned the use of the Leary vaccine, composed of strains of the influenza bacillus, and indicated that the vaccine was not of prophylactic value. The second report, by G. W. McCoy and co-workers, concerned a carefully controlled experiment on the use of a mixed vaccine similar to that brought out by Rosenow, and indicated that this vaccine was not efficacious as a prophylactic against the present epidemic. (Jour. A. M. A., Dec. 21, 1918, p. 2094.)

CORRESPONDENCE

Jan. 4, 1919.

Dear Editor:

Influenza and pneumonia were made reportable diseases by action of the Board of October 8. This information has been circulated to the physicians in the State but as yet they do not seem to realize the necessity of reporting their cases.

Will you not call the attention of the physicians in Minnesota through your columns to the necessity of reporting cases of influenza and pneumonia to the local authorities in the same manner prescribed for other communicable diseases? We are exceedingly anxious to compile records as nearly accurate as possible of the severity of the outbreak in this state, and will appreciate your co-operation.

Very truly yours,

C. E. Smith, Jr.,
Assistant Secretary.

PROGRESS IN MEDICINE AND SURGERY

LOCAL INFECTION IN CHILDHOOD: Sanford Blum (American Journal of Medical Sciences, Nov., 1918) thinks that attention has recently been concentrated upon certain potential foci of infection to the exclusion of others equally important, and as a result the subject is being treated in a narrow manner. At the same time he deplores the inclination of physicians to attribute too many ailments to focal infection. He says focal infection implies: 1st—That there exists or has existed a circumscribed lesion or focus. 2nd—That the lesion is of bacterial nature, and as such is capable of dissemination. 3rd—That from the focus there has resulted systemic infection or infection of other contiguous or non-contiguous parts. He argues that the presence of pathogenic micro-organisms within a circumscribed area does not, per se, constitute an infective process; at most it may be potential, and for the creation of infection from these foci, the bacteria must invade the circulation, and the part to be infected must be ready for their reception and propagation. The presence of pathogenic bacteria in the mouth and fauces with subsequent development of endocarditis is by no means conclusive evidence to him that the endocarditis originated from these foci, and while willing to grant that under the proper auspices endocarditis can originate from these sources, he states that the frequency in childhood of alveolar disease and tonsillitis when contrasted with the rarity of endocarditis, justifies the conclusion that such a sequence is exceedingly rare. The assumption that streptococci harbored in the tonsils possess special selective powers against the endocardium and joints seems to him unjustified. He believes the fact to be that when bacteria are injected into the circulation arthritis occurs as an incident of the induced septicemia. He says that in general, pathogenic bacteria manifest a predilection for the serous and synovial membranes and when, as a result of circulatory invasion by bacteria, morbid processes ensue, we may have a meningitis, pleuritis, endocarditis or synovitis. He points out that as the science of bacteriology has developed we have been able to designate definite types of arthritis, for example, gonorrheal arthritis, typhoid arthritis, etc., and it is obvious that the power of attacking serous and synovial membranes is not limited to the streptococcus; and so he thinks the selective morbidity is due not to specified micro-organisms but to lower power of resistance to bacterial aggression possessed by serous and synovial membranes, as contrasted with muscles, bones, nervous and connective tissues. In childhood, however, secondary foci in the more resistant tissues are commoner than in adults, due t weaker power of resistance at this stage of life, and he believes the occurrence of tuberculous hip joint disease frequently after an injury may thus be explained. Tubercular bacilli having gained access to the circulation form a focus in the body, lie in wait for a favorable opportunity and then secure a foothold in the joint as a result

of trauma, which offers a point of lower resistance. In addition to this septic effect of focal infection he points out that the systemic effects of toxines must be considered, and thinks it probable that toxins are responsible for lowering the power of resistance of the synovial membranes and thus facilitating the invasion by bacteria. The diagnosis requires the recognition of a morbid process as secondary, and the tracing of it to its source. Sepsis denotes an infective process; toxemia also may be due to focal infection, but in childhood other processes may cause toxemia, as for example, the eruptive fevers. The custom of indiscriminately ascribing to focal infections individual symptoms in his opinion is precarious and unjustifiable. The direct cause should be sought. Particularly important sites for infective foci in children are the gastro-intestinal tract and the middle ear, but the presence of pathogenic organisms in a certain locality does not constitute an infective focus, for example, colon bacilli in the intestine may remain indefinitely without causing an infective process, also the presence of streptcocci, etc., in the tonsils indefinitely without deleterious effects. He says that sequential disease must be traced to the primary focus and this requires that the correlation of the primary and secondary morbid processes must be proved. He claims that the assertions that, "It has long been known that acute rheumatic joint infections are the result of the primary infection of faucial tonsils or tissues about them—and that an acute endocarditis also has its source in many istances from the faucial tonsils,"—are not borne out by facts. He admits that the tonsils, like other parts of the body, are potential foci which may become active under proper conditions, for example following tonsillectomy. He divides the treatment in two: first, that of the lesion caused by the infection; second, of the infective focus; and thinks that perhaps most often treatment of the lesion by hygienic, medicinal, serological, surgical or prophylactic measures is the only line applicable, owing to inability to locate the source of infection or inability to eradicate it if located. He declares that the creation by operative interference of foci of infection constitutes one of the most important facts in the consideration of this subject, and while the evacuation of abcess cavities, removal of diseased appendices, surgical relief of otitis media and mastoiditis, require no comment for their approval, the promiscuous practice of tonsillectomy must be viewed differently. Too often this procedure converts an innocuous nidis into a virulently infective process. He also blames complicated orthodontia apparatus for frequently opening avenues of infection, and he closes by saying that "The common practice of tonsillectomy and tooth extraction has a diagnostic measure reprehens ble, and should be discontinued, because it is unscientific in that it is a surgical procedure undertaken without definite indication and is attended with danger; and moreover diverts attention from other diagnostic procedures which not infrequently would disclose obvious causes of disease."

W. D. Beadie.

TREATMENT OF PAINFUL DYSPHAGIA IN TUBERCULOUS LARYNGITIS: Robert McD. Lukens (New York Med. Jour., Vol. CVII, No. 8) outlines the means and application of blocking the internal branch of the superior laryngeal nerve in painful dysphagia in a series of nineteen cases. His method is similar to that of Hoffman who originated the treatment in 1908, except that he does not go in with the needle at right angles to the nerve but a little forward, directing the needle inward and backward.

Thorough asepsis should be used throughout as regards the operator's hands, instruments, and skin of neck. The instruments and solution required are: a Luer's or record syringe; tinctu e of iodine; the fluid for injection, which is a sixty-five to eighty-five per cent alcohol. A hypodermic syringe may be used with a one-and-one-half inch twenty-four gauge needle with a sharp point. The solution used consists of novocaine gr. 11; chloroform M X; alcohol dr. VI; water dr. 11 —essentially a sixty-five per cent solution of alcohol.

The patient should be either lying supine with head, neck, and shoulders raised on a pillow and the head turned to one side, or sitting upright in a chair with a comfortable back. The sitting position with the head in a natural position and neck not rigid is the most convenient for patient and operator alike. The greater cornu of the hyoid bone and the superior cornu of the thyroid cartilage is located with the index finger of the left hand and the loaded syringe held in the right hand.

The needle is then thrust through the skin about one inch anterior to the directing finger and a quarter inch above the margin of the thyroid cartilage and pushed backward and inward, the point being raised from time to time to locate its position by the directing finger tip of the left hand.

The patient gives the signal of pain in the ear by raising his hand. The nerve has been touched and a drop or two of solution is injected and a few seconds are allowed to pass to see if there is cough, due to fluid entering the lumen of the larynx. If cough develops the syringe is withdrawn a little and a few more drops injected. If no cough is present then 0.5 cc. of one cc. of the solution is injected, moving the needle around so as to surround the nerve thoroughly. Usually the pain in the ear is intensified by the discharge of the fluid into the tissues about the nerve but passes off in a few seconds, One or both sides may be injected at one sitting. In a series of 36 injections no untoward effects were noted in bilateral injection. One patient complained of a slight constriction in throat, another complained of the same thing with unilateral injection. In none has paralysis or swelling developed.

The side to be injected depends upon the site of the greater pain in swallowing, the site of the lesion, and the side on which the nerve is the more tender. If injection of one side does not relieve the pain, the other side is injected at same sitting. The patient is urged to drink water before and after the injection to note the difference. No contra-indications to the injection are known. In this series of nineteen cases a total of 39 injections were made.

The author's conclusions are:

In all cases of painful dysphagia the internal laryngeal nerve should be blocked. There are no contra-indications to nerve blocking and this procedure aids the dietetic treatment by removing or lessening dysphagia sufficiently to allow the patient to eat the necessary food.

More rest is obtained due to cessation of pain from the throat and any number of injections may be made and the patient kept in constant comfort by injecting as soon as pain recurs.

Histological examinations of injected nerves showed that the results modified the nerve trunk very little.

The writer wishes to urge the wider use of this method of treating painful dysphagia in tuberculous ulceration of the larynx, as it is a procedure which can be learned easily and practiced by the average practitioner.

GEORGE C. DITTMAN.

STUDIES IN FRACTIONAL ESTIMATION OF GASTRIC CONTENTS. II. EFFECTS OF ANTACID MEDICATION ON GASTRIC ACIDITY AND SECRETION: Burrill B. Crohn (Am. Jour. Med. Sciences, June, 1918) in his interesting studies throws a flood of light on these much misunderstood conditions.

By means of fractional estimation of the gastric contents he discovers that the normal variation of acidity at different stages of digestion may account in a large measure for the varying results obtained by different investigators as to the effect of antacids on hyperacidity—the time of digestion at which their tests were made being one of the factors and the initial neutralization of acid values after giving alkalies, with subsequent increase of acidity often above normal, being another factor.

The author's experiments were performed on the emptied fasting stomach in the morning.

A heavy oatmeal gruel was utilized as the test meal.

Specimens of chyme were withdrawn every fifteen minutes until the stomach was empty again, as evidenced by failure to obtain further specimens.

The motility of the stomach was adjudged by noting the last specimen to give the starch reaction with iodine.

The regurgitation of bile was carefully observed, as was also the presence of heavy, ropy mucus characteristic of the pyloric mucus secretion.

In every case, one or more days previous to the experiment, a control curve without medication was plotted.

The patients upon whom the experiments were made were all cases of mild functional gastrointestinal disturbances.

(1) Effect of Alkalies Administered to the Fasting Stomach Before a Meal. Magnesium oxide Grs. XV (calcined magnesia) was given one-half hour before the test breakfast. The previously plotted control curve which reached its height of (94 per cent acid titer) at the end of an hour and then gradually fell to zero, was converted into a curve in which the maximum height (86 to 96 per cent) was reached at the end of the first half hour and maintained at that level to the end of digestion. Furthermore the emptying time was delayed one-half hour.

(2) Effect of Administration of Alkalies in Single Dose During Digestion. Bicarbonate of soda in 30-grain dose given to a patient 45 minutes after the onset of digestion. In fifteen minutes the acidity dropped from 46 per cent to 22 per cent; fifteen minutes later it had rebounded to 78 per cent, which level it maintained for one-half hour and then slowly declined. There was no delay in motility.

A second patient received 60 grains of soda bicarbonate. Here there was no initial neutralization, but the first specimen of chyme withdrawn after fifteen minutes showed an increase in acid titer.

Magnesium oxide was then chosen as the type of more slowly acting and efficient alkali.

A four and half grain dose given directly after eating had no appreciable effect on decreasing the gastric acidity.

The emptying time, however, was delayed 45 minutes, due to a secondary rise in acidity late in the course of digestion.

On doubling the dose of magnesia to nine grains, in another patient, there was a reduced acidity for the first hour and then a rise to way above normal. Motility was slightly delayed.

To a third patient magnesium oxide, twelve grains, was given forty-five minutes after the onset of digestion. At the end of one and one-quarter hours the acidity had dropped from 20 per cent acid titer to 5 per cent alkaline titer, rising within the next forty-five minutes to 88 per cent acid—this point being 24 per cent above the control.

(3) Effect of Administration of Alkali at the End of the Test Meal. A dose of twelve grains of magnesium oxide given one and three-quarters hours after the ingestion of the test gruel caused a rapid and efficient neutralization of the digestive acidity without secondary rise.

(4) Antacid Effect of Bismuth Subcarbonate. A dose of thirty grains given immediately after the meal. The neutralization effect was gradual, moderate and prolonged, without deleterious after-result. Slight prolongation of motility observed.

(5) Kaolin: Action of Inert Mineral Earth on Gastric Acidity. No effect.

(6) Atropine: Its Effect on Gastric Secretion and Motility. Atropine one-sixtieth grain per hypo, given three-quarters hour after the test gruel. Little or no result seen except in the last half hour there was a secondary rise of acid from 32 to 76 per cent. No diminution of acidity observed at any time. A second experiment with a different patient gave practically identical results. Later the former patient was fully atropinized by taking moderate doses by mouth for several days. On testing the stomach contents, no variation from the control curve was noted. On the contrary the average acidity had increased.

(7) Atropine: Its Effect on Hypersecretion. The first case was one of functional hypersecretion of the continuous type. An exploratory laparotomy had failed to show any organic disease. Control tests showed that food left the stomach in two and three-quarters hours, but the secretion continued up to six

and three-quarters hours (19 as long as observed). Next day the same situation obtained, whereupon one-sixtieth grain of atropin was given hypodermically and within an hour the secretion had ceased, but there was a delay in motility up to three and one-half hours.

Repeating these experiments, but giving the atropine by mouth showed an increase in acidity, and the hypersecretion continuing for seven hours, motility unaffected.

(8) Olive Oil: Does it Affect Gastric Acidity? A slight rise of total acids, no effect on motility.

(9) Administering of Alkalies in Divided Doses During Digestion. The previous observations of the effects of alkalies on gastric acidity having demonstrated, first a primary neutralization, and second a compensatory reaction with excessive acid production, an attempt was made to cause a continuous depression of the acid curve by dividing the single dose of alkali into equal portions and distributing these portions over the course of the digestion.

Magnesium oxide used. Five-grain doses given every half hour, beginning forty-five minutes after the onset of digestion, and continued for four doses. The effect was a gradual and permanent depression of the acid curve.

Conclusions:

As regards the alkaiine salts both soda and magnesia act in relatively the same manner. Both neutralize the acidity at the moment of administration, the bicarbonate more quickly but less thoroughly, the magnesia more slowly but more effectively.

But after either salt the primary neutralization is followed by an irritative rise to the previous acid level or even above it.

The custom of administering alkalies before meals as is practised by some physicians, is a mistake, for the reason that the meal comes at the time of the secondary rise and the digestive acidity is reinforced rather than diminished.

The disadvantages of a large dose of magnesia, fifteen grains or more, are: (1) that the initial depression is one-half to two hours; (2) the subsequent reaction of the acid-secretory cells is so vigorous that the therapeutic purpose is defeated.

The dose of magnesia should therefore be a moderate one, eight to fifteen grains, depending on the degree of hyperchlorhydria one wishes to effect.

The neutralizing power of the magnesia radical is three and one-half to four times as strong as that of the soda radical.

The method of administering fractional doses of magnesia at intervals during digestion has proved the most practical manner of employing such a salt for the correction of hyperchlorhydria. Five grains every half hour is excellent.

The action of bismuth is highly satisfactory. Its neutralization of acid is deliberate, moderate and prolonged, and a secondary rise of acidity is avoided.

Atropine has a restricted use and should be employed only in hypersecretion.

Lasting relief of hyperacidity is more likely to be found in the proper regulation and restriction of dietary errors as well as in the general control of hygiene and manner of living of each individual patient.

CHARLES N. HENSEL.

THE COMPARATIVE VALUE OF RADIUM AND ROENTGEN RADIATION: R. H. Boggs (The American Journal of Medical Sciences for November, 1918), compares the therapeutic effect of radium and X-rays. He says that all things being equal, radium is preferred where a localized reaction is desired, and Roentgen Rays should be used when large areas are to be treated. In many instances radium should be used locally, while the adjacent lymphatics should be treated by the X-rays.

No tissue is unaffected by either the rays from radium or the Roentgen tube, providing the intensity be sufficiently great and the exposure of adequate duration. There is always a latent period after application of either type of ray. The larger the dose the shorter the latent period will be. Every kind of tissue reacts in its own specific way. The gland cells will be destroyed by a dose which will not destroy cellular tissue or skin; that is, there is a selective action. The lymphatics are very sensitive, being cicatrized by destruction of lymphoid cells. Endothelial linings of blood vessels are very easily affected, causing obliteration of the lumen in small vessels. Endothelium is more susceptible to radium than to X-ray, hence the value of radium is vascular naevi. Diseased tissues are more easily influenced than healthy tissues. The action also varies with the type of the disease. Sarcoma in lymphatics is more easily destroyed than carcinoma, sarcomatous glands being destroyed by one-third to one-fifth the amount of radiation that is necessary for carcinomatous ones.

It is the rule in treating malignancy to give as heavy a dose as the normal tissue will stand and treat the glandular tissue as far away from the growth as possible. Tuberculous adenitis responds more readily than carcinomatous adenitis but not so readily as sarcomatous glandular involvement, but the results in tuberculous adenitis are more permanent than in malignancy.

The rodent ulcer type of epithelioma responds to less radiation than the squamous celled type because the adjacent glands are so early involved. In the squamous type this fact is no certain indication for Roentgen treatment in squamous epithelioma. Epitheliomas on the mucous membranes are particularly malignant, and a marked reaction should be promptly produced.

In treating malignant growths with either radium or Roentgen rays the object is to destroy the cancer cells without permanently injuring normal tissue. After a case is properly diagnosed and classified, the type of treatment must be determined: surgical, radium or Roentgen, or a combination. No method is ideal, but all have merit. Surgery is by no means always the method of first choice, nor should radiation be looked upon as a "last resort" method.

Considering a few special types, he says in part: Carcinoma of Uterus: Here radiation has been used only in practically hopelessly inoperable or recurring cases. The palliation is satisfactory and possibly adds

four to six years to the patient's life. After radium treatment the local effects are most striking; the bleeding ceases and the offensive discharge is checked or becomes odorless. Locally the effect is noticed in from two to four weeks and the cancerous mass begins to shrink. The general health then quickly improves. Pain is relieved, morphine may be withdrawn and the patients are returned to normal for the time at least.

The most desirable technique at present is the use of 50 to 100 mg radium applied locally, and Roentgen therapy used from without.

Carcinoma of the Rectum: The results in this locality vary greatly and cannot be compared with the results in carcinoma of the uterus. Colostomy previous to radiation is being recommended as an advisable preliminary. Carcinoma of the bladder and prostate have been successfully treated by Young who has devised very ingenious methods for application of the element to the growth.

Epithelioma: Radium and Roentgen rays should in general be considered as a routine in treatment of epithelioma, because when properly applied, practically all the epitheliomatous tissue can be made to disappear. Equally good results can be obtained with either agent. In special locations such as the mucous membranes, radium is preferable.

HENRY E. MICHELSON.

BOOK REVIEWS

PRINCIPLES OF BACTERIOLOGY. (By Arthur A. Eisenberg, A.B., M.D. Director of Laboratories, St. Vincent's Charity Hospital; Demonstrator of Pathology, School of Medicine, Western Reserve University; Visiting Pathologist, St. John's Hospital; Visiting Pathologist, Lutherna Hospital; Fellow American Medical Association. Illustrated. Published by C. V. Mosby Co., 1918.)

This book consists of three divisions; first, includes general; second, special bacteriology; third, diseases of unknown origin, bacteria of soil, milk, air, and water, and the general care of the laboratory. Although this textbook is intended primarily for nurses only, it will meet with great satisfaction the demands of many a busy practitioner. The author, convinced that bacteriology being one of the most fundamental subjects in the entire nursing course, has used all the precautions necessary to make this subject clear, simple, complete, and interesting. Looking in the near future, he states, the nurse will unquestionably be acting laboratory assistant or at least a trained technician. And, therefore, with this end in view he has endeavored to include especially all the tests, technic and methods, etc., to give the aspirant in bacteriology not only a general view of the entire course but the details necessary to successfully practice the same.

Under general bacteriology the chapter dealing with the forms, types and theories of immunity is especially commendable. It presents this so frequently unintelligibly expressed subject in a clear, simple, and yet comprehensive manner. The chapters in special bacteriology show not only originality in the arrangement but also in the introduction of material heretofore never included in bacteriology. This has reference to the section in each chapter of Disease Production, Mode of Infection, Disinfection, Prophylaxis. This division, moreover, is very useful because it conveys to the student knowledge which he rightly should have of bacteriology, but unfortunately, ordinarily has not, if he has not previously studied clinical medicine.

JOHN A. LEPAK.

INFORMATION FOR THE TUBERCULOUS. (By F. W. Wittich, A.M., M.D. Instructor in Medicine and Physician in Charge of Tuberculosis Dispensary in the University of Minnesota Medical School; Visiting Physician to University Hospital, Minneapolis, Minnesota. Published by C. V. Mosby Company, St. Louis, 1918. Price, $1.00.)

The author presents a collection of valuable information and statistics concerning the anatomy and physiology of the normal lungs and shows how they may become infected with the tubercle bacilli. He then describes in a most readily comprehensible manner the various stages of development of the infected area. He does not leave his readers here but continues his interesting instruction, ever ready to assist and encourage "the good fighter." Dr. Wittich never fails to emphasize the importance of sanatorium care, during which time the patient is really attending a school of instruction, which if followed, will permit him, not only to save his life, but become a happy and useful member of society rather than a detriment to his community. The author mentions among other points, Diet, Rest and Exercise, Use of Tuberculin, Drugs, Surgery of Pulmonary Tuberculosis, Cautions to be Observed, Tuberculosis and the War, finally concluding with a definition of Terms regarding Information for the Tuberculous. DOLORES M. POSCH, R.N.

ABSTRACTS OF WAR SURGERY. An Abstract o the War Literature of General Surgery that Has Been Published Since the Declaration of War in 1914. (Prepared by the Division of Surgery, Surgeon-General's Office. Published by C. V. Mosby Company, St. Louis, 1918. Price, $4.00.)

This volume, together with index, occupies 434 pages. It does not aspire to anything except prepared abstracts on war surgery, based on articles appearing in all the prominent journals in this country and some of those published abroad.

It is as complete a volume of abstracts as one could wish for but its intrinsic value is the fact that references to the original articles in whole are plainly given.

The abstracts are interesting and one who has not read the original articles can, with great ease and expedition, find in just what journals they have appeared in detail. H. J. O'BRIEN.